M. M Gill.

MATERIA MEDICA

FOR NURSES

GROFF

HANDBOOK

OF

MATERIA MEDICA

FOR TRAINED NURSES

INCLUDING SECTIONS ON THERAPEUTICS AND TOXICOLOGY
AND A GLOSSARY OF TERMS WITH DOSE
AND USE OF EACH DRUG

BY

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PREFACE.

In preparing this work the author has endeavored to present the extensive subject of Materia Medica in an abridged form, but one sufficiently comprehensive to meet the requirements of the trained nurse.

It is somewhat difficult to arrange the subject into distinct sections, but the plan of so doing has been followed as closely as possible.

The work is intended to make the nurse acquainted with the numerous drugs of vegetable and chemic origin, their Latin and English names, the parts of the plants used, the names of and something about the preparations, the chemicals used as medicines, the handling of them, etc. It is a systematic arrangement of a subject which hitherto has been left for the nurse to pick up haphazard.

The general arrangement is after the order usually taught in the medical and pharmaceutical colleges of the country.

Perhaps the only point in which the book differs from all other text-books for nurses, with one exception, with which the author is familiar, is by the introduction at the end of each chapter of a list of exemplary questions. Many explanatory paragraphs and foot-notes have also been introduced.

The questions are intended more for examples than as some-

thing to be learned by heart, for no true teacher will depend on set questions.

The explanations and foot-notes will aid the nurse in more clearly comprehending her subject.

It will be found that the questions are so worded and so placed relatively to the order of the text that answers to them must be thought out or searched for.

The subject of therapeutics lies outside the scope of this work, and has not been touched upon except in stating, by name, the principal action of the drugs, describing or defining that name, and, in case of the common poisons, going as far as giving the prominent symptoms as distinguished from the symptoms of disease.

A work of this kind is largely compiled, and its chief claim to originality is in the adaptation of well-known means to a new purpose. Constant use has therefore been made of the latest standard works on chemistry, materia medica, and pharmacy, and of the current pharmaceutical literature.

JOHN E. GROFF, PH.G.

PROVIDENCE, R. I., *July, 1898.*

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HANDBOOK

OF

MATERIA MEDICA.

SECTION I.

OFFICIAL DRUGS AND PREPARATIONS.

CHAPTER I.

INTRODUCTORY.

Before entering upon the course of instruction and training designed to fit a woman for following her chosen occupation as a nurse, she is required to show that she can "read, write, and cipher," and that her education, such as she possesses, shows her to be mentally capable of accomplishing the purpose before her.

After she has finished her course and started out into the world, the physician in the place where she settles, in accepting the declarations of her diploma, expects to find her familiar, up to a certain point, with facts relating to the different branches into which the study of medicine has been divided.

She is expected to know, besides the practical points concerning the care of the sick and the injured, the technical names of the various parts of the body,—such as the bones, blood-vessels, air-passages, intestines, nerves, muscles, etc.,—the names and symptoms of disease, the signs of death, the care of the dead, etc.; along with these and other things she is expected to know something about the medicines she handles—their origin, the drugs prepared from them, the measurement of them, their dosage, and the recognition of some of the more important of them.

In order to gain this knowledge it is necessary that she should follow a systematic course of study of all these things, materia medica among them. It has been urged, mainly by physicians,—and, doubtless, through some unpleasant experiences, with some show of reason,—that a course in materia medica is not only unnecessary for nurses, but injurious to them, as tending to lead them into prescribing. There is, however, only *apparent* and no *real* reason for such an opinion. In this respect the pharmacist and the nurse are similarly placed and similarly misjudged. I am sure, after a number of years of close observation of both classes, that it is only the *partially* learned who attempt to prescribe—that the more nearly one approaches to a full understanding of materia medica, the more clearly will he or she perceive the utter folly of attempting prescription.

The pharmacist, through long years of work among drugs, has greatly advanced that branch of the science of medicine with which he is connected. Many of the crude and nauseating drugs of former times are not now used; the active principles of some of them having been discovered, are used in their place, while in other instances the preparations of them

have been made more sightly and palatable. Thus the pharmacist has been, and is now, an invaluable assistant to the physician. In like manner the nurse, by careful observation during her presence at the bedside of the sick patient, becomes, if she has been taught how to observe, an invaluable assistant to the physician.

Either the pharmacist or the nurse, in order to be able to aid the physician, must of necessity be familiar with at least the elementary principles of the various branches of learning constituting the study of the science called medicine.

A physician uses technical language for a number of reasons. Besides being the language of science the world over, by the use of a technical word or phrase he conveys in a moment a meaning which, otherwise expressed, would require whole sentences of words and occupy many minutes at a time when the loss of every minute tells. It is necessary also at times to conceal from a patient the real condition of affairs, and here refuge is found behind the technical term and the nurse must understand them.

Broadly defined, materia medica is that branch of science which treats of substances and methods used in curing the sick and the injured.

CHAPTER II.

WEIGHTS AND MEASURES.

In weighing and measuring medicines, whether they are simple or complex, harmless or injurious, *always* proceed carefully and allow nothing to attract your attention.

The nurse has very little to do with weighing. Yet as medicines, even in fluid form, are spoken of and labeled as containing a certain number of grains of the drug to each minim, fluidram, or fluidounce, and as medicines are dosed in grains and fractional parts of a grain, it becomes necessary that she should familiarize herself with the tables of weights and measures in common use, the signs used to designate them, and the approximate domestic measures used in every household.

There are two systems of weight which have always been in use in our country.

They are the avoirdupois and the apothecaries' weight.

The avoirdupois weight is used by *all* buyers and sellers.

The apothecaries' weight is *not* used in buying and selling, but in weighing drugs to be mixed for medicinal use.

The unit in both these systems is the grain. It is represented by the sign gr., which is the abbreviation of the word.

Leaving the avoirdupois system as being already familiar to you in all your dealings outside the medical world, we take the first multiple above the grain in the apothecaries' system.

The scruple (℈) weighs twenty grains and the sign for it is an arbitrary one, the origin of which, as well as those standing for drams and ounces, is lost in antiquity. The sign is ℈.

The dram (ʒ) weighs sixty grains and is represented by the sign ʒ. It also weighs three scruples.

The ounce (℥) weighs 480 grains and is represented by the sign ℥. It also weighs twenty-four scruples, or eight drams.

It will be seen that the scruple, weighing twenty grains, is one-third the weight of a dram; that the dram weighs three scruples, or sixty grains; that the dram weighing sixty grains is one-eighth the size of an ounce, which weighs 480 grains, or eight drams.

Thus we have:

1. The grain (sign, gr.).
2. The scruple (sign ℈), weighing twenty grains.
3. The dram (sign ʒ), weighing sixty grains, or three scruples.
4. The ounce (sign ℥), weighing 480 grains, or twenty-four scruples or eight drams.

The Roman numerals are commonly used to indicate the number of grains, scruples, drams, or ounces to be used in writing prescriptions, and they follow the sign, thus: gr. j, ℈vj, ʒviij, ℥lxiv.

The abbreviation f placed before the signs for drams or ounces indicates that *fluid* drams or *fluid* ounces are to be *measured* and not weighed. Thus, f ʒj, f ℥iv.

NOTE.—In measuring medicines or in speaking of their doses, the word drop should be left out and the word minim substituted.

Drops vary with the form and material of the container from which they are dropped, and also with the mobility and density or tenacity of the fluids. To illustrate:

60 drops of water will measure, ... 60 minims.
50 drops of syrup of gum Arabic will measure, . . 60 minims.
250 drops of chloroform will measure, ... 60 minims.

It seems impossible to believe that twenty drops of chloroform will measure no more than five minims, and the nurse is recommended to try it and be convinced of the difference between minims and drops.

If a physician orders five *drops* of chloroform and you give five *minims*, you give *twenty* drops instead of five.

Alcoholic tinctures average two drops to the minim. If a physician orders ten *minims* of tincture of opium for a dose, expecting to get the effect of one grain of opium, and you drop ten *drops*, you only give one-*half* the number of minims, and consequently *half* as much opium as he ordered.

As a rule, when drops must be used, in the absence of a measure:

Watery fluids, ... 1 drop = 1 minim.
Alcoholic fluids, ... 2 drops = 1 minim.
Ethereal fluids, ... 4 drops = 1 minim.

In fluid measure we have first the minim, or standardized drop, with the sign ♏ being, as with the grain, the abbreviation of the word.

Next higher we have the fluidram, made up of sixty minims and represented by the sign ʒ.

The fluidounce measures 480 minims, or eight fluidrams, and is represented by the sign fʒ.

The gill, not commonly used, measures four fluidounces or thirty-two fluidrams. There is no sign used.

The pint measures four gills, or sixteen fluidounces, or 128 fluidrams. It is represented by the sign O, standing for octavus, or one-eighth, in allusion to the fact that it is the eighth of a gallon.

The quart measures two pints, or eight gills, or thirty-two fluidounces. It is represented by the sign Qt., the abbreviated word, and the word itself is from the Latin word *quartuus*,

meaning the fourth or quarter part, in allusion to the fact that it is the fourth or quarter part of a gallon.

The gallon, represented by Cong., measures four quarts, or eight pints, or 128 fluidounces. The sign, Cong., is from the Latin word *congius*, meaning a gallon.

Approximate Measures.

The following approximate measures are given here in deference to the common usage of centuries:

One teaspoonful	equals about	one fluidram.
One dessertspoonful	" "	two fluidrams.
One tablespoonful	" "	four fluidrams.
One wineglassful	" "	two fluidounces.
One teacupful	" "	four fluidounces.
One tumblerful	" "	eight fluidounces.

As these household measures vary greatly, they should be used only when circumstances render it necessary. A graduated glass, for measuring as high as two fluidounces, and another graduated in minims up to two fluidrams should always form a part of the equipment of the trained nurse.

Note.—As there are accurate and inaccurate measuring glasses in the market, it is well the nurse should know the name of a manufacturer of them whose reputation for accuracy is undoubted. Such a firm is Whitall, Tatum & Co., of Philadelphia. Their wares are to be found in all cities, and are plainly labeled or etched with their name.

The Use of the Graduated Measuring Glass.

While administering medicine, the nurse should never allow herself to be disturbed, and such medicines as are to

be measured should be *carefully* measured. The graduated glass should always be washed and wiped immediately after using, preparatory for use the next time, for, aside from the desirability of cleanliness as a virtue, there is positive danger in soiled utensils. Many medicines are decomposed by contact with other chemicals, and the results of such decompositions are quite as likely to be dangerous as otherwise. Numerous cases of the kind are on record, and twice it has come to the author's knowledge that disastrous results have followed such negligence. So the habit should be formed to *always* wash a glass or a dropper immediately after using.

On all properly made graduates the lines marking the measurements of fluidrams and fluidounces run entirely around the glass. In measuring, bring the glass to the level of the eye and slowly pour in the fluid to be measured until the surface of it is even with the line *all around* the glass. This can be much more effectively shown than told, and it is an important point that all senior nurses should show their juniors. Never allow the nervousness which frequently attends beginners to affect the accuracy of your work. When you are about to measure a dose of medicine look for your bottle, read its label, and then reach for it. As you raise the measuring glass to the level of your eye, look at the label again. Measure the medicine and, as you return the bottle to its place, *again* read the label. Here are three chances to correct a possible error—always take advantage of them. Finally, if in the act of measuring you happen to get in too much, pour it back and begin again, no matter who may be watching you. *Never, for any consideration, let a mistake go uncorrected, or, having happened, never fail to report it at once at headquarters, and nowhere else.*

QUESTIONS TO CHAPTER II.

Name the weights used in the Apothecaries' system.

What sign is used to distinguish between an ounce and a fluidounce?

How many grains in a dram?

How many minims in a dram and a half?

In a scruple and a half, how many grains?

How many teaspoonfuls in a wineglassful?

How many fluidrams in eight fluidounces?

How many dessertspoonful doses in a six-ounce mixture?

How much would remain in a twelve-ounce bottle of solution of magnesium citrate after three doses had been used: One dose of half a cupful; another dose of a wineglassful, and another of four tablespoonfuls?

In four fluidounces, how many teaspoonfuls?

In thirty-two fluidrams, how many dessertspoonfuls?

A physician prescribes a dessertspoonful of medicine at ten, two, six, and ten o'clock from a four-ounce mixture. In two days he calls and finds the bottle three-quarters full. Have his directions been followed?

You are ordered to make a pint of solution of carbolic acid—four drams of carbolic acid to the pint of water. You have nothing but household measures. How would you manage?

CHAPTER III.

THE FRENCH, OR METRIC, SYSTEM OF WEIGHTS AND MEASURES.

It has long been a matter of regret among scientific men that the systems of weights and measures used by the great civilized nations should differ. The French system was introduced in 1790, and has gradually been making its way into use among civilized nations ever since. It is taught in all our scientific schools and colleges. In the latest medical works it finds place alongside the old system, just as the Centigrade thermometer degrees are placed side by side with the Fahrenheit degrees, and for the same reason—viz., that we may gradually become familiar with them.

The unit of this system originated in a measurement of the earth's circumference from north, around by the south, to the north again—its *polar* circumference. That fractional part of it (the forty-millionth part) approaching very nearly to our common yard measure was selected as the unit of the measure of length, and was named the meter, from *metron*, a Greek word meaning measure, and from that word the name metric has come to be used in speaking of the system.

This measure, or meter, is divided into fractional lengths of tenths, hundredths, and thousandths.

The tenth of a meter is called the decimeter; the prefix deci- meaning $\frac{1}{10}$.

The hundredth of a meter is called the centimeter; the prefix centi- meaning $\frac{1}{100}$.

The thousandth of a meter is called the millimeter; the prefix milli- meaning $\frac{1}{1000}$.

If one-tenth of a meter is one decimeter, then ten decimeters must make one meter.

One one-hundredth of a meter being one centimeter, then 100 centimeters must make one meter.

One one-thousandth of a meter is one millimeter, then 1000 millimeters must make one meter.

The terms expressing the multiples of the meter are:

Ten meters make one decameter; the prefix deca- meaning tenfold.

One hundred meters make one hectometer; the prefix hecto- meaning 100 fold.

One thousand meters make one kilometer; the prefix kilo- meaning 1000 fold.

Ten thousand meters make one myriameter; the prefix myria- meaning 10,000 fold.

It is seen that the measurements, both multiples and subdivisions, increase and decrease by tens.

From the measure of length all others are obtained—those of capacity, weight, and area.

The unit of fluid measure is derived in this way: A cube is constructed $\frac{1}{10}$ of a meter, or one decimeter, in all its dimensions of length, breadth, and depth. This vessel is the unit of capacity and is called the liter.

This unit is too large, being equivalent to about one quart, for use in measuring medicines, and, just as we find no use for gallons, quarts, and pints, but use fluidounces, fluidrams, and minims, so with this metric system we throw aside the liter and use one of its subdivisions. In place of a cube, one *deci*meter in all its dimensions, we construct one that is one *centi*meter, or $\frac{1}{100}$ of a meter in length, breadth, and depth, and we call this vessel a cubic centimeter, using the abbreviated sign c.c.

The unit of weight is called the gram, and is expressed by gm. The weight which will exactly balance a cubic centimeter vessel when filled with water gives us this unit called the gram.

We have then for our units the meter, or measure of length; the cubic centimeter, or measure of fluid quantities; the gram, or measure of weight.

The prefixes used in signifying the subdivisions and multiples of these measures of capacity and weight are just the same as those used to signify the subdivisions and multiples of the measure of length. And, as we say milli-, centi-, and deci-, or deca-, hecto-, and kilo*meters*, so we say milli-, centi-, and deci-, or deca-, hecto-, and kilo*liters* and *grams*. These prefixes are not all used in connection with the weighing and measuring of medicines. The "United States Pharmacopœia" uses two, the gram and the cubic centimeter, these being quite sufficient for the purpose.

The following diagram may serve to show how the figures are placed relatively to the terms, how they *may* be and how they *are* read; which terms we as handlers of medicines use, and which we discard:

Myria- = 10,000	Kilo- = 1,000	Hecto- = 100	Deca- = 10	Gram	deci- = $\frac{1}{10}$	centi- = $\frac{1}{100}$	milli- = $\frac{1}{1000}$
M	K	H	D	Gm	d	c	m
×	×	×	×		×	×	
8	7	6	5	4	3	2	1

These figures are read as 87,654 gm. and 321 milligrams. All the other terms are discarded, as shown by the × mark. The manner of writing and the way of reading is best shown by exemplary or typical prescriptions. There has been much discussion as to the proper way of writing in the decimal system. In France, where the system had its origin, and in our latest pharmacopeia the custom of writing the figures with the decimal point and following them by the sign prevails. The German pharmacopeia uses the figures and decimal alone.

In our own country we generally follow our own standard. Remembering then, that gm. stands for gram and indicates that something is to be weighed, and that c.c. stands for cubic centimeters, or something to be measured, we give the following prescription:

Magnesium sulphate,	30	gm.
Water,	60	c.c.
Spirit of peppermint,	0.5	c.c.

These quantities are variously written in private practice thus:

	Gm. or c.c.
30.	30
60.	60
0.5	⌊5
Without signs.	Both signs: one way for fluids, the other for solids; fluids are to be measured in cubic centimeters and solids weighed in grams, the signs being written once for all at the top.

While it may be years before this system of weights and measures shall entirely supersede the old system, it is believed that a short table of equivalents easy to remember or handy

to refer to, if the necessity to do so ever *should* arise, will be fittingly inserted here.

500 c.c. in place of one pint.
500 gm. " " " one pound avoirdupois.
30 c.c. " " " one fluidounce—f ℥ j.
30 gm. " " " one ounce weight.
4 c.c. " " " one fluidram—f ʒ j.
4 gm. " " " one dram weight.
1 c.c. " " " ♏xv.
1 gm. " " " grs. xv.

And reversing them:

One pint	in	place	of	500 c.c.
One pound	"	"	"	500 gm.
One fluidounce	"	"	"	30 c.c.
One ounce weight	"	"	"	30 gm.
One fluidram	"	"	"	4 c.c.
One dram weight	"	"	"	4 gm.
Fifteen minims	"	"	"	1 c.c.
Fifteen grains	"	"	"	1 gm.

The approximates of the household measures are as follows:

One teaspoonful	or f ʒ j	"	"	"	4 c.c.
One dessertspoonful	or f ʒ ij	"	"	"	8 c.c.
One tablespoonful	or f ℥ iv	"	"	"	16 c.c.
One wineglassful	or f ℥ ij	"	"	"	60 c.c.
One cupful	or f ℥ iv	"	"	"	120 c.c.
One tumblerful	or f ℥ viij	"	"	"	240 c.c.

The equivalents for fractional parts of a grain are quite easy to obtain mentally if the equivalent of one grain is memorized. This equivalent is 65 milligrams, and is written thus: 0.065 gm., or $\frac{65}{1000}$ of a gram. Sixty-five milligrams being 1 grain, then half a grain would be half of sixty-five

milligrams, which in round numbers would be 0.033 gm. (33 milligrams).

$\frac{1}{4}$	grain would be	$\frac{1}{4}$	of 0.065,	or 0.016 gm.
$\frac{1}{8}$	" "	$\frac{1}{8}$	of 0.065,	or 0.008 gm.
$\frac{1}{30}$	" "	$\frac{1}{30}$	of 0.065,	or 0.002 gm.
$\frac{1}{60}$	" "	$\frac{1}{60}$	of 0.065,	or 0.001 gm.
$\frac{1}{3}$	" "	$\frac{1}{3}$	of 0.065,	or 0.020 gm.

QUESTIONS TO CHAPTER III.

What is the origin of the metric system of weights and measures?
Give the names of the units of length, capacity, and weight.
Describe the origin of the cubic centimeter.
Describe the origin of the gram.
How many centigrams in a gram?
How many milligrams in a gram?
How many grams in a kilogram?
How many milligrams in one grain?
How many milligrams in $\frac{1}{4}$, $\frac{1}{10}$, $\frac{1}{30}$, $\frac{1}{6}$ of a grain?
How many cubic centimeters in f℥j? in f℥j? in f℥xvj?
How many teaspoonfuls in 120 c.c.?
How many cubic centimeters in a wineglassful?
How many tablespoonfuls in 45 c.c.?
How many tablespoonful doses will be left of a 180 c.c. mixture after eight teaspoonful doses have been taken out?
How many milligrams of opium in a one-grain opium pill?
How many milligrams of nitroglycerin in a tablet of $\frac{1}{100}$ of a grain?
The dose of strychnine being $\frac{1}{30}$ of a grain, is 0.030 gm. (30 milligrams) too much to give?
How would this prescription be written in figures?—

Potassium iodid, ...	650 milligrams
Bichlorid of mercury, ...	1 milligram
Water, ...	4 c.c.

How would this one be read?—

Potassium iodid, ...	0.650 gm.
Bichlorid of mercury, ...	0.001 gm.
Water, ...	4 c.c.

NOTE.—Let the pupil remember the true object of these equivalents. When the system comes into use it will be quite as easy to measure a cubic centimeter as a fluidram, or to weigh sixty-five milligrams as one grain. But it is writing in one system and dosing by teaspoonfuls, etc., which render it necessary to arrive, by a mental process, to the knowledge as to the correctness of your dose. Thus: You are directed to give ten grains of potassium iodid from a solution containing ten grains to each fluidram, and you measure out one dram and give it; but if the doctor says give 0.650 gm., you are lost.

Notice the following:

Morphine, ...	gr. j or 0.065 gm.
Water, ...	f℥j or 30 c.c. M.

Dose.—Teaspoonful.

As written first, without thinking or at least without any apparent effort, you know a teaspoonful to contain one-eighth of a grain of morphine and the dose to be safe. Not so with the second writing. But by very little of the right sort of practice you quickly learn that 65 milligrams are 1 grain, that 30 c.c. are 1 fluidounce, and the figuring is done. The two preceding chapters should be made use of all through the succeeding pages, and every time a dose is stated its equivalent metric figures should be required instantly, or *vice versâ*.

Blackboard exercise will greatly aid the pupil and the teacher also. Exhibits of graduated glasses in the two systems will also be of great aid.

CHAPTER IV.

CRUDE DRUGS.

There are many hundreds of substances used as medicines. The official list of the pharmacopeia alone contains of drugs and preparations almost a thousand. They are derived from all three of the great kingdoms of nature, the mineral, the vegetable, and the animal. And the earth, the sea, and the air are all, directly or indirectly, drawn upon for supplies.

We will consider first those crude drugs, some of which come from the animal, but most of them from the vegetable, kingdom.

NOTE.—The pharmacopeia—a word constantly used in this work—is the name given the book which names and describes the substances used as medicines, and gives standard directions for making the various preparations of them. The things contained in it are spoken of as official, and the letters U. S. P. are used to distinguish the United States from the British, French, German, or any other pharmacopeia.

The following list does not include *all* the official drugs. A *complete* list of them will be found at the end of the volume. Here we will consider those only which you will be likely to meet with often.

ROOTS.

LATIN NAME.	ENGLISH NAME.	MEDICAL ACTION.
Aspidium, ...	Male fern, ...	Teniacide.
Convallaria, ...	Lily of the valley, . .	Heart depressant.

ROOTS (*continued*).

Latin Name.	English Name.	Medical Action.
Gentiana,	Gentian,	Bitter tonic.
Glycyrrhiza,	Licorice,	Expectorant.
Aconitum,	Aconite,	Cardiac sedative.
Hydrastis,	Golden seal,	Tonic.
Jalapa,	Jalap,	Cathartic.
Ipecacuanha,	Ipecac,	Emetic.
Rheum,	Rhubarb,	Cathartic and astringent.
Sarsaparilla,	Sarsaparilla,	Alterative.
Valeriana,	Valerian,	Nerve stimulant.
Zingiber,	Ginger,	Stimulant and carminative.

The definitions of the words descriptive of the medicinal action of drugs will be given as far as possible in connection with the drugs and they should be learned.

Teniacide.—Any medicine capable of destroying tapeworms is called a teniacide.

Heart stimulants, or **cardiac stimulants,** as the name implies, stimulate the heart's action—the force and frequency of the pulse.

Tonics are medicines which increase the vigor and tone of the system by improving the appetite, favoring digestion and assimilation, and adding strength to the circulatory system.

Expectorants are used to facilitate the expulsion of bronchial secretions and to modify the character of these when abnormal.

Cardiac Sedatives.—These allay the heart's action.

Cathartics.—Drugs which cause evacuation of the contents of the intestinal canal.

Emetics cause vomiting. Sometimes they act mechanic-

ally by irritating the stomach; sometimes by exciting the nervous centers which cause vomiting.

Astringents produce contraction of muscular fiber. They also coagulate albumen and lessen the secretion from mucous surfaces.

Alteratives are those medicines which produce a beneficial change.

Stimulants quicken the activity of the vital forces, and their effect is temporary.

Carminatives are those remedies which aid in the expulsion of gas from the intestines.

A complete list of such terms, taken by *permission* from the series of lectures recently published by the "Pharmaceutical Era" Company, and written by Professor L. E. Sayre, of Kansas University, will be found at the end of the volume. It was written for pharmacists. Pharmacists and nurses, in respect to therapeutics, are in the same rank. They need a knowledge of terms and definitions, but under *no* circumstances should they take advantage of their knowledge by prescribing. Reasonably or unreasonably physicians are very jealous of their rights, and peace will not be present with a physician and a prescribing nurse in the house together.

BARKS.

Latin Name.	English Name.	Properties.
Cinchona,	Cinchona, or Peruvian bark,	Antipyretic and tonic.
Gossypium,	Cotton-root bark,	Emmenagogue.
Prunus,	Wild cherry,	Sedative, tonic.
Cascara,	Cascara,	Tonic, laxative.
Viburnum,	Black haw,	Action specifically on the uterine system.

Antipyretics are medicines which reduce the temperature of the body.

Laxatives produce gentle evacuations of the intestinal canal. A *tonic* laxative, besides having that effect, strengthens the parts acted upon.

LEAVES.

Latin Name.	English Name.	Action.
Belladonna,	Deadly nightshade or belladonna,	Narcotic.
Buchu,	Buchu,	Diuretic.
Coca,	Coca,	Stimulant, local anesthetic.
Digitalis,	Digitalis,	Cardiac stimulant.
Humulus,	Hops,	Sedative, tonic.
Hyoscyamus,	Henbane or hyoscyamus,	Narcotic.
Pilocarpus,	Jaborandi,	Sialagogue and diaphoretic.
Senna,	Senna,	Cathartic.
Uva ursi,	Uva ursi,	Diuretic.

Narcotics lessen the sensibility to pain and produce sleep. In poisonous doses they cause coma and death.

Diuretics are remedies which increase the secretion of urine.

Anesthetics suspend consciousness temporarily. Local anesthetics affect only those parts to which they are applied.

Sialagogues are those medicines which cause an increased secretion and flow of saliva.

Diaphoretics increase the action of the skin and promote perspiration.

SEEDS.

The fruits and seeds are distinct, botanically, but they are not separated here, because they are terms *popularly* interchangeable and the separation is unnecessary. Such things may be easily told by the teacher.

LATIN NAME.	ENGLISH NAME.	PROPERTIES.
Anisum,	Anise,	Carminative.
Capsicum,	African, or cayenne, pepper,	Stimulant.
Cardamomum,	Cardamom,	Carminative.
Colchicum,	Colchicum,	Sedative.
Ergota,	Ergot,	Parturient
Nux vomica,	Nux vomica,	Tonic.
Staphisagria,	Larkspur,	Antiparasitic.
Strophanthus,	Strophanthus,	Heart stimulant.

Any of these drugs may be thus defined:

What is aconite? It is a root, the official Latin and English name is aconite, and in its properties it is narcotic.

What is digitalis? It is a leaf, the English name of which is also digitalis, and it is commonly called foxglove. It is used as a heart stimulant.

What is cinchona? Cinchona is a bark. Its common names are Peruvian, calisaya, or Jesuits' bark. It is a tonic and an antipyretic.

What is anise? Anise is a seed, or, more correctly speaking, a fruit (in the text at the end of the volume the full official definition will be found). Its common name is also anise, and it is used as a carminative.

GUMS.

There are quite a number of substances in the official materia medica which are commonly spoken of as gums. Strictly speaking but one of them is a gum, and their true names are assigned them in the list already referred to at the end of the volume and to which the pupil should constantly refer in study.

LATIN NAME.	ENGLISH NAME.	PROPERTIES.
Acacia,	Gum Arabic,	Demulcent.
Aloe,	Aloes,	Cathartic.
Asafœtida,	Asafetida,	Antispasmodic.
Benzoinum,	Benzoin,	Expectorant.
Camphora,	Camphor,	Sedative.
Catechu,	Catechu,	Astringent.
Guaiacum,	Guaiacum,	Alterative, stimulant.
Guarana,	Guarana,	Stimulant.
Kino,	Kino,	Astringent.
Opium,	Opium,	Narcotic.
Tragacantha,	Tragacanth,	Demulcent.

NOTE.—Guarana nor kino nor indeed *any* of these, except gum Arabic, are true gums, but they are popularly spoken of as such.

Demulcents soothe inflamed mucous surfaces.

Antispasmodics prevent or stop, after they have commenced, violent and irregular action of both the voluntary and involuntary muscles.

It will be noticed that, with few exceptions, the Latin and English names are alike, or at the most differing in their terminal syllable. Upon this plan all drugs of modern discovery have been named. The few exceptions are instances of drugs which acquired a world-wide commercial name before

their scientific names became fully determined, and in such instances it has been found impossible to eradicate the old name. Humulus, for instance, and gossypium are known the world over and entirely outside the medical and scientific world as hops and cotton.

These crude drugs are not usually given in their natural condition. But their medicinal properties are extracted from them by methods which vary according to the nature of the drugs, and it is the preparation *from* the drug and not the drug itself which we administer to the sick.

There are a number of reasons for this. The drugs themselves, uncooked, are difficult of digestion, and therefore slow of action. They consist largely of wholly indigestible woody fiber, which in the enfeebled conditions of disease would disturb the digestive function. The drugs themselves are subject to loss of medicinal strength by the action of the elements or the attack of insects while the preparations are stable. The strength of the drug varies from season to season. The strength of the preparation is capable of being standardized. For these and other reasons the various tinctures, fluid extracts, solutions, etc., have been invented, and it is these which are used and not the drugs themselves.

A Special Description of Opium and Ergot.—Opium is the dried milk-juice of the poppy of the tropical countries of the far East.

As it reaches our market it is in irregularly shaped lumps, which were originally globular, but which have become more or less misshapen by packing. The lumps are of the consistence of putty which become dry and grow hard on exposure to air. They vary in size from pieces of the size of an apple to pieces as large as the two fists. Externally they are of the

color of dried leaves, and, in fact, this color is given them by the leaves, which are wrapped around the balls when they are fresh and which imbed themselves in the surface and remain there. Broken while moist, the mass is of a dark-brown color, appearing like moist vegetable matter ground up. It has a very peculiar odor and taste, which, once recognized, will never leave the memory. Usually the lumps are hard, and when broken present a smooth fracture of a rich chocolate color. Its chief active principles are morphine and codeine. It is quite as often found in powdered form, and, in fact, the powdered opium is now the standard opium. It should contain fourteen per cent. or fourteen grains of morphine in every 100 grains of opium. This is about one-seventh part, so that a grain of opium, if it is of standard quality, is equal to $\frac{1}{7}$ of a grain of morphine. But, of course, *all* vegetable substances vary in their composition, and generally opium varies.

ERGOT.

This was placed among the list of seeds, there being no others of its class. Ergot is a fungus which grows upon the ears of wheat, rye, and barley. It takes the place of and grows among the kernels. There will be, perhaps, one or as many as five kernels of ergot upon one ear. Some may be seen in almost any field of ripening grain, being easily distinguished by their dark, almost black color. In size they are about twenty-five millimeters long (one inch), cylindric in shape, curved, smaller at the ends than in the middle; hard, seal-brown outside and gray within. As it is very unstable, the fluid extract from the new ergot is the only form in which it is used.

QUESTIONS TO CHAPTER IV.

How many drugs and preparations make up the official materia medica?

What is meant by the word official?

What is meant by the word pharmacopeia?

What is capsicum, hyoscyamus, gentian, wild cherry, ginger, foxglove, aconite, henbane, senna, ergot, digitalis?

What are the medicinal actions of these drugs?

Define in each instance the word expressive of that action.

Name a diuretic drug, a stimulant, a tonic, an antipyretic, a teniacide, a cathartic, a carminative.

Why are not the drugs themselves *always* used in medicine?

NOTE.—It is well to be uniform in defining a drug. For instance: What is belladonna? The Latin name is belladonna, the English name is belladonna, the common name is deadly nightshade; the part used is the leaf, and in its medicinal action it is a narcotic.

CHAPTER V.

THE AQUEOUS PREPARATIONS OF THE PHARMACOPEIA.

Latin Name, Aquæ (*a'-kwē*). *English Name*, Waters.

A water, in its pharmacopeial meaning, is a solution of a volatile substance in water.

Explanation.—Anything is said to be volatile which, when left exposed to the air at ordinary temperatures, evaporates. Hence, all the waters if left open to the air will evaporate or lose their strength.

With a few exceptions, noticed further on, the waters are used for flavoring purposes, in rendering bad-smelling and bad-tasting medicines less disagreeable. They should be freshly made and possess the well-defined odor of the substances indicated by their titles. They should be perfectly transparent and entirely free from stringy growths.

The following is the complete official list. Those in the first section are made by simply agitating the substance with water until it is dissolved. All of them are medicinal.

Latin Name.	English Name.
Aqua creosoti,	Creosote water.
Aqua chloroformi,	Chloroform water.
Aqua amygdalæ amaræ,	Bitter almond water.

NOTE.—In case of the chloroform water, an excess is used to keep up the strength and is found settled at the bottom of the bottle. It is customary on the part of the druggist to pour off the clear water so that, as it comes to your notice, there will be no sediment or chloroform at the bottom of the bottle.

The second section embraces those which are made by the following process: The oil from which the water is prepared is rubbed in a mortar with some inert powder and the water, and then filtered through paper. The oil mentioned is used in place of the drug from which it has been separated, because it is more convenient. It does not all dissolve in the water and is prevented from passing through the filter by the powder which is used; that absorbing it and holding it back upon the filter. This act should be shown the pupil whenever possible.

LATIN NAME.	ENGLISH NAME.
Aqua anisi, ...	Anise water.
Aqua camphoræ, ...	Camphor water.
Aqua cinnamomi, ...	Cinnamon water.
Aqua fœniculi, ...	Fennel water.
Aqua menthæ piperitæ, ...	Peppermint water.
Aqua menthæ viridis, ...	Spearmint water.

The third section includes the waters obtained by the process called distillation.

Explanation.—Distillation—When water or other fluids are heated they are converted into vapor. This vapor will, if conducted into a cooled chamber, resume its original fluid form again. Advantage is taken of this natural phenomenon to separate volatile substances, or substances which are capable of vaporization, from non-volatile substances which will not vaporize.

To perform this act three utensils are necessary: First, a boiler, technically called a still, to hold the substance to be distilled; second, a tube, technically called a worm or condenser, to conduct the vapor to the receiving chamber; third, the receiving chamber, technically called the receiver, and chilled by contact on the outside by cooled water. Heat is applied to the still and cooled water to the receiver, and the distillation goes on.

Latin Name.	English Name.
Aqua aurantii florum fortior, . . .	Stronger orange-flower water.
Aqua destillata, ...	Distilled water.
Aqua rosæ fortior, ...	Stronger rose-water.

The last section contains solutions of gases.

Latin Name.	English Name.
Aqua ammoniæ, ...	Ammonia water.
Aqua ammoniæ fortior, ...	Stronger ammonia water.
Aqua hydrogenii dioxidi, ...	Water or solution of hydrogen dioxid or peroxid of hydrogen.

Note.—This last one is one of the substances which requires very great technical skill in its preparation. Among the many brands in the market the author knows of but one which is permanent under all exposures of climate, and that is the brand made by Messrs. McKesson & Robbins, of New York.

THE SOLUTIONS OF THE PHARMACOPEIA.

Latin Name, Liquores. *English Name*, Solutions.

Liquors are aqueous preparations of non-volatile substances, and they are distinguished from waters by that fact.

A complete official list is given. Those of common use are italicized.

Latin Name.	English Name.
Liquor acidi arsenosi,	Solution of arsenous acid.
Liquor ammonii acetatis,	*Solution of ammonium acetate* (spirit of mindererus).
Liquor arseni et hydrargyri iodidi,	Solution of arsenic and mercuric iodid (*Donovan's solution*).
Liquor calcis,	*Solution of lime*, or *lime-water*.
Liquor ferri acetatis,	Solution of ferric acetate.
Liquor ferri chloridi,	*Solution of ferric chlorid*.
Liquor ferri citratis,	Solution of ferric citrate.
Liquor ferri et ammonii acetatis,	*Solution of iron and ammonium acetate* (Basham's mixture).
Liquor ferri nitratis,	Solution of ferric nitrate.
Liquor ferri subsulphatis,	*Solution of ferric subsulphate* (Monsel's solution).
Liquor ferri tersulphatis,	Solution of ferric sulphate.
Liquor hydrargyri nitratis,	Solution of mercuric nitrate.
Liquor iodi compositus,	*Compound solution of iodin* (Lugol's solution).
Liquor magnesii citratis,	*Solution of magnesium citrate*.
Liquor plumbi subacetatis,	*Solution of lead subacetate* (Goulard's extract).
Liquor plumbi subacetatis dilutus,	Diluted solution of lead subacetate.
Liquor potassæ,	Solution of potash.
Liquor potassii arsenitis,	*Solution of potassium arsenite* (*Fowler's solution*).
Liquor potassii citratis,	Solution of potassium citrate.
Liquor sodæ,	Solution of soda.
Liquor sodæ chloratæ,	*Solution of chlorinated soda* (Labarraque's solution).
Liquor sodii arsenatis,	Solution of sodium arsenate.
Liquor sodii silicatis,	Solution of sodium silicate.
Liquor zinci chloridi,	Solution of zinc chlorid.

It will be noticed that none of the liquors are of vegetable origin. The same is true of some other aqueous preparations. All, both those of vegetable and chemic origin, are given in

this chapter, and those of chemic interest will receive attention later. Of such are the very important arsenic solutions, Monsel's solution, etc.

NOTE.—When we use the word solution we imply something dissolved, and all solutions should therefore be clear. They may, in large vessels, be dark-colored and impenetrable to the eye, but in thin layers they should be quite transparent and never show a sediment at the bottom of the bottle.

THE SYRUPS.

Latin Name, Syrupi. *English Name*, Syrups.

These are solutions of medicinal substances in water sweetened with a large proportion of sugar. These being solutions *should* be clear, but owing to the refractory nature of the drugs it is sometimes difficult to make them so, and quite frequently they are cloudy. They sometimes ferment, which is shown by the frothing or by the odor peculiar to fermenting solutions, and commonly expressed by the word sour.

LATIN NAME.	ENGLISH NAME.
Syrupus,	Syrup.
Syrupus acaciæ,	Syrup of acacia, or gum Arabic.
Syrupus acidi citrici,	Syrup of citric acid.
Syrupus acidi hydriodici,	*Syrup of hydriodic acid.*
This syrup should be colorless.	
Syrupus allii,	Syrup of garlic.
Syrupus althææ,	Syrup of marsh-mallow.
Syrupus amygdalæ,	Syrup of almonds.
Syrupus aurantii,	*Syrup of orange.*
Syrupus aurantii florum,	Syrup of orange flowers.
Syrupus calcii lactophosphatis,	Syrup of the calcium lactophosphate.
Syrupus calcis,	Syrup of lime.

LATIN NAME.	ENGLISH NAME.
Syrupus ferri iodidi,	*Syrup of iodid of iron*, or ferrous iodid.

This syrup should be green—not brown.

Syrupus ferri, quininæ, et strychninæ phosphatum,	*Syrup of the phosphates of iron, quinine, and strychnine.*

Contains $\frac{1}{80}$ of a grain of strychnine to f℥j.

Syrupus hypophosphitum,	*Syrup of the hypophosphites.*

This syrup is often prescribed under the name syrup of hypophosphites, *U. S. P.*, in distinction from Fellows' *compound* syrup of hypophosphites. The latter contains strychnine.

Syrupus hypophosphitum cum ferro,	*Syrup of the hypophosphites with iron.*
Syrupus ipecacuanhæ,	*Syrup of ipecac.*
Syrupus krameriæ,	Syrup of krameria or rhatany.
Syrupus lactucarii,	Syrup of lactucarium.
Syrupus picis liquidæ,	Syrup of tar.
Syrupus pruni virginianæ,	*Syrup of wild cherry.*
Syrupus rhei,	*Syrup of rhubarb.*
Syrupus rhei aromaticus,	*Aromatic syrup of rhubarb.*
Syrupus rosæ,	Syrup of rose.
Syrupus rubi,	Syrup of blackberry.
Syrupus rubi idæi,	Syrup of raspberry.
Syrupus sarsaparillæ compositus,	*Compound syrup of sarsaparilla.*
Syrupus scillæ,	*Syrup of squill.*
Syrupus scillæ compositus,	Compound syrup of squill, or hives syrup.
Syrupus senegæ,	Syrup of senega.
Syrupus sennæ,	*Syrup of senna.*
Syrupus tolutanus,	*Syrup of tolu.*
Syrupus zingiberis,	Syrup of ginger.

THE HONEYS.

Latin Name, Mellita. *English Name*, Honeys.

A honey is a solution of a medicinal substance in honey.

It is a class of preparations used more by foreign than by native physicians.

They should be clear and show no signs of fermentation.

Latin Name.	English Name.
Mel,	Honey.
Mel despumatum,	Clarified honey.
Mel rosæ,	Honey of rose.

THE MUCILAGES.

Latin Name, Mucilagines. *English Name*, Mucilages.

A mucilage is a thick, viscid solution, made by dissolving or soaking various gums or substances of a gummy nature in water. They are used as demulcent drinks, and such familiar substances as gum Arabic, flaxseed, elm-bark, quince seed, etc., furnish them by simple soaking in water for a few hours and straining through gauze, and are largely used in domestic medicine. They are usually free from sediment, but are not perfectly transparent. They decompose readily, becoming sour.

Latin Name.	English Name.
Mucilago acaciæ,	Mucilage of acacia.
Mucilago sassafras medullæ,	Mucilage of sassafras pith.
Mucilago tragacanthæ,	Mucilage of tragacanth.
Mucilago ulmi,	Mucilage of elm.

THE MIXTURES.

Latin Name, Misturæ. *English Name*, Mixtures.

Mixtures are fluid preparations containing an insoluble substance (that is, one incapable of being dissolved by water)

mixed with water, and held in suspension by gum or sugar or some other viscid substance. A mixture is not a clear solution, and when left for a while undisturbed will show more or less sediment at the bottom of the bottle.

NOTE.—The mixtures are usually made thick enough by the addition of gum and sugar to enable one to pour out a dose into a spoon before the undissolved substance has had time to settle. They should always be shaken in common with *all* medicines which are not perfectly clear.

LATIN NAME.	ENGLISH NAME.
Mistura cretæ, ...	*Chalk mixture.*
Mistura ferri composita, ...	Compound iron mixture (Griffith's mixture).
Mistura glycyrrhizæ composita, . .	Compound mixture of licorice (Brown mixture).
Mistura rhei et sodæ, ...	Mixture of rhubarb and soda.

EMULSIONS.

Latin Name, Emulsa. *English Name*, Emulsions.

An emulsion is a mixture containing an oil or a resinous substance mixed with water and gum, yolk of egg, or some other viscid substance.

They differ from mixtures in the simple fact that the insoluble substance in an emulsion is always an oil or of an oily nature.

There are no *familiar* official emulsions, but as the official list is short, they are given :

LATIN NAME.	ENGLISH NAME.
Emulsum ammoniaci, ...	Emulsion of ammoniac.

This name resembles ammonia, but it is a gum-resin entirely different from ammonia.

Latin Name.	English Name.
Emulsum amygdalæ, ...	Emulsion of almonds.
Emulsum asafœtidæ, ...	Emulsion of asafetida.
Emulsum chloroformi, ...	Emulsion of chloroform.

The waters, liquors, syrups, honeys, mucilages, mixtures, and emulsions all contain water as the vehicle in which they are mixed.

QUESTIONS TO CHAPTER V.

What is the pharmacopeial definition of a water?
What is meant by a volatile substance?
Describe the process called distillation.
How do waters and solutions differ?
What are the official names of Lugol's, Donovan's, and Fowler's solutions? Of lime-water?
Define the word syrup.
What would indicate that a syrup had been spoiled?
What is the official title of mucilage? Of gum Arabic?
How are mucilages made?
How do mixtures and emulsions differ?

CHAPTER VI.

PREPARATIONS—(Continued).

THE GLYCERITES.

Latin Name, Glycerita. *English Name*, Glycerites.

These are solutions of medicinal substances in glycerin.

Latin Name.	English Name.
Glyceritum acidi carbolici, ... Antiseptic.	Glycerite of carbolic acid.
Glyceritum acidi tannici, ... Astringent.	Glycerite of tannic acid.
Glyceritum boroglycerini, ... Antiseptic.	Glycerite of boroglycerin.
Glyceritum hydrastis, ... Astringent.	Glycerite of hydrastis.
Glyceritum vitelli, ... Used for emulsifying oils.	Glycerite of yolk of egg.

SPIRITS—ESSENCES.

Latin Name, Spiritus. *English Name*, Spirits.

A spirit is a solution of a volatile substance in alcohol. They are used to give an aromatic odor and agreeable taste to mixtures, and as correctives to nausea and griping caused by some medicines. They are also carminative and stimulant to debilitated stomachs. Some of them have special physio-

logic action, like, for instance, spirit of niter, which is diuretic and diaphoretic. The following is the official list:

Latin Name.	English Name.

Spiritus ætheris, ... Spirit of ether.

Stimulant. Dose, 4 to 12 c.c.

Spiritus ætheris compositus, ... *Compound spirit of ether* (Hoffman's anodyne).

Stimulant and anodyne. Dose, 2 to 8 c.c.

Spiritus ætheris nitrosi, ... Spirit of nitrous ether (sweet spirit of niter.

Diuretic and diaphoretic. Dose, 2 to 8 c.c.

Spiritus ammoniæ, ... Spirit of ammonia.

Stimulant and antispasmodic. Dose, 1 to 4 c.c.

Spiritus ammoniæ aromaticus, . . . Aromatic spirit of ammonia.

Used oftener than the simple spirit of ammonia because of its flavor. Stimulant and antispasmodic. Dose, ½ to one teaspoonful.

Spiritus amygdalæ amaræ, ... Spirit of bitter almond.

Used as a flavor. It should be sparingly used, for in large quantities it *might* prove poisonous. The oil from which it is made always contains hydrocyanic or prussic acid, more or less, so no more than a few drops may be used as a flavor.

Spiritus anisi, ... Spirit of anise.

Carminative. Dose, f℥j to 8 c.c.

Spiritus aurantii, ... Spirit of orange.

Used as a flavor, *ad lib.*

Spiritus aurantii compositus, . . . Compound spirit of orange.

It is the flavor for the official aromatic elixir, which is the vehicle of all ordinary elixirs; medicinal substances being added to them instead of to water.

Spiritus camphoræ, ... Spirit of camphor.

Sedative. Dose, 0.300 c c. to f℥j.

Spiritus chloroformi, ... Spirit of chloroform.

Anodyne. Dose, 10 to 60 ♏ (0.600 to 4 c.c.).

Spiritus cinnamomi, ... Spirit of cinnamon.

Carminative. Dose, 10 to 20 ♏ (20 to 40 gtt.).

LATIN NAME. ENGLISH NAME.

Spiritus frumenti, ... The spirit of fermentation, or whisky.

NOTE.—The name whisky is said to have been first applied in Scotland, where it means water. In old English books, or stories of old English life, it is spoken of as *strong* water.

Stimulant. The dose varies from f℥j to f℥ij.

Spiritus gaultheriæ, ... Spirit of gaultheria, or wintergreen.

Stimulant and flavor. Dose, 0.6 to 2 c.c.

Spiritus glonoini, ... Spirit of glonoin, or trinitrin, or nitroglycerin.

Cardiac stimulant. Dose, 0.060 to 0.120 c.c. (1 to 2 ♏).

NOTE.—This is more safely given in tablet form.

Spiritus juniperi, ... Spirit of juniper.

Diuretic. Dose, 2 to 4 c.c.

NOTE.—This same name is given to gin. The circumstances under which they are ordered signify which is meant. Spirit of juniper is used as an adjunct to other diuretics, while gin is nothing more or less than whisky, flavored by the addition of fresh juniper berries during its distillation.

Spiritus juniperi compositus, . . . Compound spirit of juniper.

Diuretic. Dose, f℥ij to f℥iv (8 to 16 c.c.).

Spiritus lavandulæ, ... Spirit of lavender.

Stimulant and carminative. Dose, 30 ♏ to f℥j.

Spiritus limonis, ... Spirit of lemon.

Solely as a flavor.

Spiritus menthæ piperitæ, ... Spirit or essence of peppermint.

Stimulant and carminative. Dose, 30 ♏ to 4 c.c.

Spiritus menthæ viridis, ... Spirit or essence of spearmint.

Stimulant and carminative. Dose, 60 gtt. (30 ♏) to 120 gtt. (60 ♏).

Spiritus myrciæ, ... Spirit of myrcia, or bay rum.

Restorative when inhaled.

Spiritus myristicæ, ... Spirit of nutmeg.

Flavor.

Latin Name.	English Name.

Spiritus phosphori, ... Spirit of phosphorus.
Nerve stimulant—rarely used. Dose, 10 ♏; contains $\frac{1}{90}$ of a gr. of phosphorus.

Spiritus vini gallici, ... Spirit of French wine, or brandy.
Stimulant. Dose, f℥j to f℥j.

It will be noticed that some of the names, indicating the active ingredients of these spirits, are chemic names. Their chemic nature will be considered in its proper place, in the chapters devoted to chemicals. Such are the spirits of ammonia, ether, chloroform, niter, and glonoin. The others, such as orange, bitter almond, anise, cinnamon, wintergreen, juniper, lavender, lemon, peppermint, spearmint, bay, and nutmeg, are all made by dissolving the volatile oils from those substances in alcohol.

ELIXIRS.

Latin Name, Elixiria. *English Name*, Elixirs.

An elixir is a solution of medicinal substances in water, rendered agreeable to the senses of smell and taste by the addition of various aromatics and a large proportion of sugar, besides being brought into the class of stimulants by the addition of one-fourth part of alcohol.

There are only two *official* elixirs, but the number of proprietary ones is very great. As the official aromatic elixir is very extensively used as a vehicle for nauseating medicines, its formula is given in full:

Latin Name.	English Name.
Elixir aromaticum, ...	Aromatic elixir.
Compound spirit of orange, consisting of the oils of orange, lemon, anise, and coriander, . . .	12 c.c.
Syrup, ...	375 c.c.
Alcohol, about, ...	375 c.c.
Water, to make	1000 c.c.

It will be noticed the amount of alcohol is more than one-third. These elixirs are very popular with the public, and their popularity is undoubtedly due to their effect, as what may be called nerve-*fooler*s. Their stimulating effect easily leads people into the belief that a cure is being effected, while the usual attendant depression, on the cessation of regular doses of spirit, which closely follows the use of the last dose of a bottle, leads to the purchase of another. And the author would point to not only the harm done by the indiscriminate and uneducated use of such things, but to the fact that the nurse should warn persons, ignorant of their pernicious effects, against their use as quickly as she would against the use of whisky or any other strong drink. The medicinal value is undoubted, but their use should, like all other medicines, be under the control of the physician.

Elixir phosphori, ... Elixir of phosphorus.

Nerve stimulant. Each cubic centimeter contains $\frac{1}{4}$ of a milligram of phosphorus (0.00025 gm.). Each fluidram contains about $\frac{1}{85}$ of a grain. Dose, ℥j (4 c.c.).

COLLODIONS.

Latin Name, Collodia. *English Name*, Collodions.

Collodion is a solution of a substance called gun-cotton, with ether and alcohol, and collodions to be used for special

purposes are made by dissolving the substance which it is desirable to use in collodion.

Gun-cotton will receive attention under the proper heading in organic chemistry.

Latin Name.	English Name.
Collodium, ...	Collodion.

External use.

Collodium cantharidatum, ... Cantharidal collodion.

It is vesicant from the addition of cantharides, or Spanish fly.

Collodium flexile, ... Flexible collodion.

Made by the addition of castor oil and balsam of fir to collodion. Its name indicates its only advantage over collodion. Flexible collodion yields to the movements of the parts to which it is applied. Collodion does not, and, furthermore, as its sometime name of contractile collodion implies, *contracts* or *draws* upon the surface to which it is applied, producing a feeling of discomfort.

Definition.—Vesicants are those drugs which, upon being applied to the surface of the body, cause what is commonly called a blister.

Collodium stypticum, ... Styptic collodion.

Styptic by reason of the addition of tannic acid.

Definition.—Styptics are those drugs which cause the cessation of bleeding by clotting the blood and closing the aperture through which it may be escaping.

LINIMENTS.

Latin Name, Linimenta. *English Name*, Liniments.

Liniments are composed of aromatic oils, resins, ammonia, and other stimulants, with various anodyne drugs and emol-

lients, all mixed with oils or alcohol and intended for external use.

Definition.—Emollients soothe and soften inflamed surfaces.

Latin Name.	English Name.
Linimentum ammoniæ, ...	Ammonia liniment (volatile liniment).
Ammonia water, alcohol, cotton-seed oil.	
Linimentum belladonnæ, ...	Belladonna liniment.
Fl. ext. belladonna and camphor.	
Linimentum calcis, ...	Lime liniment (carron oil).
Lime-water and linseed oil, p. e.	
Linimentum camphoræ, ...	Camphor liniment.
Camphor and cotton-seed oil.	
Linimentum chloroformi, ...	Chloroform liniment.
Chloroform and soap liniment; anodyne liniment	
Linimentum saponis, ...	Soap liniment.
Soap, camphor, oil rosemary, alcohol, water.	
Linimentum saponis mollis, ...	Liniment of soft soap.
Soft or green soap, oil of lavender, and alcohol.	
Linimentum sinapis compositum, . .	Compound mustard liniment.
Oil of mustard, camphor, mezereum,* castor oil, alcohol.	
Linimentum terebinthinæ, ...	Turpentine liniment.
Resin cerate and spirit of turpentine.	

There is a soap liniment in solid form, not official, called opodeldoc. It is made of a peculiar form of soap, called curd soap, without the use of water, and solidifies after it is made.

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* This drug or any other not in the list already given will be found at the end of the volume, in the official list there given.

OLEATES.

Latin Name, Oleata. *English Name*, Oleates.

An oleate is a chemic compound of the medicinal substance, with oleic acid. They are produced sometimes in semifluid, and sometimes in solid form.

NOTE.—Oleic acid is one of the products of the chemic decomposition of oil by steam under pressure. It will receive attention further on.

LATIN NAME.	ENGLISH NAME.
Oleatum hydrargyri, ...	Oleate of mercury.
Oleatum veratrinæ, ...	Oleate of veratrine.

Veratrine is an alkaloid which we shall meet again.

Oleatum zinci, ...	Oleate of zinc.

INFUSIONS.

Latin Name, Infusa. *English Name*, Infusions.

An infusion is prepared by soaking a drug in hot or cold water for a specified time—an hour, more or less—and straining. Some drugs lose their medicinal value by the use of hot water. Infusions of all such drugs should be made with cold water.

It will frequently happen that you have an infusion to make. In preparing them one ounce of drug to one pint of water is the approximate strength, unless made from a poisonous drug, when the quantity should be specified. The drug is placed in a pitcher or a bowl of proper size and material to resist the action of hot water, and boiling hot water is poured upon it. The vessel is covered and the infusion allowed to remain undisturbed until cold. It is then to be strained through gauze, without pressure.

LATIN NAME. ENGLISH NAME.

Infusum cinchonæ, ... Infusion of cinchona.
Antipyretic and tonic. Dose, f℥ij.

Infusum digitalis, ... Infusion of digitalis.
Heart stimulant and diuretic. Dose, f℥j to f℥iv.

Infusum pruni virginianæ, . . . Infusion of wild-cherry bark.

This is one of the drugs the medicinal value of which is entirely destroyed by hot water.
Sedative. Dose, f℥j to f℥xxiv.

DECOCTIONS.

Latin Name, Decocta. *English Name*, Decoctions.

A decoction is prepared by boiling a drug in water for a specified time, and straining.

This also is one of the preparations met with in domestic use. One ounce of the drug is placed in a porcelain or a granite-ware dish and one pint of boiling water poured upon it. It is then covered and allowed to boil, not violently, for fifteen minutes. The decoction is then strained through gauze, without pressure, and sufficient water is run through the strainer to make up for whatever amount may have been lost in the act of straining. As there are only two decoctions and they are unimportant they will not be placed here.

QUESTIONS TO CHAPTER VI.

What are glycerites?
What is a spirit? What common name is given them?
What is a volatile substance?
What are essences used for?
What is the common name of compound spirit of ether? What is its dose?
What are all the ethereal spirits used for?

What is the Latin name for sweet spirit of niter?

Its dose is 8 c.c.; what fractional part of a wineglassful is that? How many teaspoonfuls is it? How many drams?

What is a diaphoretic?

What is the dose of spirit of camphor?

What is the official title of essence of wintergreen?

How do spirit of juniper and gin, sometimes called by the same name, differ?

What is an elixir? Why is its indiscriminate use objectionable?

What is collodion made from?

What is flexible collodion made from?

What is a styptic?

Which of the collodions is used as a vesicant?

What is a liniment?

Give the official title of carron oil.

What is it made of?

Official title of volatile and of anodyne liniment.

What is the difference between soap liniment and soft soap liniment?

What is opodeldoc?

What is oleic acid made from?

What class of preparations are made from it?

What are infusions and decoctions?

Tell how each may be made.

What is the dose of infusum digitalis?

NOTE.—The nurse, while in the hospital, should, as far as possible, make herself familiar with the appearance of the various preparations coming under her observation by smelling of them and noticing their characteristic appearances.

CHAPTER VII.

PREPARATIONS—(Continued).

TINCTURES.

Latin Name, Tincturæ. *English Name*, Tinctures.

Owing to the importance of their standing among medicinal preparations, the tinctures and fluid extracts will receive special attention in a chapter by themselves.

A tincture is an alcoholic or a dilute alcoholic solution of the soluble portions of a drug, *generally* of vegetable origin, but in a few instances each, of animal or mineral origin.

This large and important class of preparations are made in two ways, viz., by maceration and by percolation.

By Maceration.—The drug is placed in a suitable container —usually a large bottle. The alcohol or diluted alcohol (usually spoken of as the menstruum) is poured upon it and the drug is allowed to soak, with frequent agitation, for *fourteen* days, or other specified time, dependent upon the nature of the drug. The medicinal principles, the coloring matter, and numerous inert substances are, by this act, dissolved out, and the whole being thrown upon a filtering paper the tincture passes through, leaving the exhausted drug upon the filter.

By Percolation.—A vessel called a percolator, one form of which is shaped like a funnel, is plugged in the neck by a wad of absorbent cotton, a piece of sponge, or filtering paper. The powdered drug is placed in the percolator. The menstruum is poured upon it and allowed to slowly run through the

drug. The flow is regulated to about 120 gtt. per minute, more or less, according to the readiness with which the drug yields its soluble matter, and by the time all the menstruum is passed through, everything in the drug capable of being dissolved *is* dissolved and carried down into the receiving vessel. The substance left in the percolator is inert. All its color, odor, taste, in fact its activity, has been removed and is now present in the menstruum and constitutes a tincture.

The list here given is of official tinctures; but the complete list, embracing *all* the tinctures, some of which are seldom used, will be found in the Appendix.

LATIN NAME. ENGLISH NAME.

Tinctura aconiti, ... Tincture of aconite.
Sedative. Dose, 1 to 3 ♏ (0.065 to 0.195 c.c.).

Tinctura arnicæ florum, ... Tincture of arnica flowers.
External use, vulnerary.

Definition.—Vulnerary medicines are used externally to relieve the pain of such external injuries as bruises, etc.

Tinctura asafœtidæ, ... Tincture of asafetida.
Antispasmodic. Dose, 30 ♏ to ℥j.

Tinctura belladonnæ foliorum, . . . Tincture of belladonna leaves.
Narcotic. Dose, 5 to 15 ♏ (10 to 30 gtt.).

Tinctura benzoini composita, . . . Compound tincture of benzoin.
Stimulant, antiseptic. Dose, 2 to 8 c.c.

Tinctura calumbæ, ... Tincture of calumba.
Tonic. Dose, teaspoonful to a tablespoonful.

Tinctura cannabis indicæ, ... Tincture of cannabis indica.
Narcotic. Dose, 30 ♏, increased.

Tinctura capsici, ... Tincture of capsicum.
Stimulant. Dose, 2 c.c. to ℥j.

LATIN NAME. ENGLISH NAME.

Tinctura cardamomi composita, . . Compound tincture of cardamom.
Carminative. Dose, f℥ ss to f℥ ij.

Tinctura cimicifugæ, ... Tincture of cimicifuga.
Alterative. Dose, teaspoonful to 15 c.c.

Tinctura cinchonæ, ... Tincture of cinchona.
Tonic, antipyretic. Dose, 4 to 16 c.c.

Tinctura cinchonæ composita, . . . Compound tincture of cinchona.
Tonic, antipyretic. Dose, f℥ j to f℥ iv.

Tinctura colchici seminis, ... Tincture of colchicum seed.
Alterative, antirheumatic. Dose, 2 to 8 c.c.

Tinctura digitalis, ... Tincture of digitalis.
Heart stimulant. Dose, 3 to 12 ♏.

This tincture contains about one grain of drug in six minims. The dose of the drug is ½ to 2 grs., which quantities are represented by the above doses.

Tinctura ferri chloridi, ... Tincture of ferric chlorid. Tincture of sesquichlorid of iron.
Hematic. Dose, 10 to 30 ♏.

Definition.—Hematics restore the quality of the blood, exerting a direct influence upon its composition.

Tinctura gelsemii, ... Tincture of gelsemium.
Antispasmodic. Dose, 0.600 to 1.2 c.c.

Tinctura gentianæ composita, . . . Compound tincture of gentian.
Tonic. Dose, 1 to 2 teaspoonfuls (4 to 8 c.c.).

Tinctura guaiaci ammoniata,* . . . Ammoniated tincture of guaiacum.
Alterative. Dose, f℥ j to f℥ ij (4 to 8 c.c.).

* This word ammoniated alludes to the menstruum. Instead of using alcohol, we use aromatic spirit of ammonia, which is a mixture of alcohol and ammonia. The ammonia renders the guaiacum miscible with water.

LATIN NAME. ENGLISH NAME.

Tinctura hyoscyami, ... Tincture of hyoscyamus.
Narcotic. Dose, teaspoonful (f℥j) (4 c.c.).

Tinctura iodi, ... Tincture of iodin.
External use.

Tinctura ipecacuanhæ et opii, . . . Tincture of ipecac and opium.
Anodyne, diaphoretic. Dose, 10 ♏ = 1 gr. of opium and 1 gr. of ipecac.

Tinctura lavandulæ composita, . . . Compound tincture of lavender.
Adjuvant and corrigent. Dose, 30 gtt. to f℥j.

Tinctura myrrhæ, ... Tincture of myrrh.
Mouth-wash, emmenagogue. Dose, 15 ♏ to f℥ss.

Tinctura nucis vomicæ, ... Tincture of nux vomica.
Tonic. Dose, 20 ♏.

Tinctura opii, ... Tincture of opium, laudanum.
Narcotic. Dose, 10 to 20 ♏, or 20 to 40 gtt., or 0.650 to 1.300 c.c., each of these quantities representing from 1 to 2 grs. of opium.

Tinctura opii camphorata, ... Paregoric, camphorated tincture of opium.
Camphor, opium, oil of anise, benzoic acid, glycerin, and alcohol.
Anodyne. Dose, teaspoonful, or f℥j, or 4 c.c., or 60 ♏, equaling ¼ of a grain of opium, or 0.016 gm. (16 milligrams).

Tinctura opii deodorati, ... Tincture of deodorized opium.

NOTE.—This was designed to displace what is known as McMunn's Elixir of Opium. It differs from the ordinary tincture of opium in having its nauseating properties removed during the process of making.

Narcotic. Dose, 10 to 20 ♏, equaling 1 to 2 grs. of opium.

Tinctura rhei, ... Tincture of rhubarb.
Cathartic and astringent. Dose, f℥j to f℥ij.

Tinctura rhei aromatica, ... Aromatic tincture of rhubarb.
Cathartic and carminative. Dose, f℥ss to f℥j.

Tinctura rhei dulcis, ... Sweet tincture of rhubarb.
Cathartic for children. Dose, 1 to 3 teaspoonfuls.

Latin Name.	English Name.

Tinctura strophanthi, ... Tincture of strophanthus.
Cardiac stimulant. Dose, 5 to 15 ♏.

Tinctura valerianæ, ... Tincture of valerian.
Nerve stimulant. Dose, f℥j to 16 c.c.

Tinctura veratri viridis, ... Tincture of veratrum viride.
Heart depressant. Dose, 1 to 8 ♏.

Tinctura zingiberis, ... Tincture of ginger.
Stimulant, carminative. Dose, 10 ♏ to f℥j.

Following is a schedule of all the official poisonous tinctures, with the percentage amount of drug they contain, and their doses:

	Latin Name.	English Name.	Percentage Strength.	Dose.
2	Tinctura nucis vomicæ.....	Tincture of nux vomica...	2%	5–15 ♏
5	Tinctura strophanthi.....	Tincture of strophanthus..	5%	10–40 ♏
10	Tinctura ipecacuanhæ et opii.....	Tincture of ipecac and opium.....	10%	10–20 ♏
	Tinctura opii.....	Tincture of opium.....	10%	10–20 ♏
	Tinctura opii deodorati.....	Tincture of deodorized opium.....	10%	10–20 ♏
15	Tinct. belladonnæ foliorum.	Tinct. of belladonna leaves	15%	3–20 ♏
	Tinctura cannabis indicæ...	Tinct. of cannabis indica..	15%	3–20 ♏
	Tinctura colchici seminis...	Tinct. of colchicum seed..	15%	3–20 ♏
	Tinctura digitalis.....	Tincture of digitalis.....	15%	3–20 ♏
	Tinctura hyoscyami.....	Tincture of hyoscyamus...	15%	3–20 ♏
35	Tinctura aconiti.....	Tincture of aconite.....	35%	1–6 ♏
40	Tinctura veratri viridis.....	Tincture of veratrum viride.....	40%	1–6 ♏

Note.—There may be some apparently slight discrepancies in the doses of this schedule and those given under the head of all the tinctures. But doses to a certain extent are arbitrary. Later a *rule* will be given which will be found by every one using it to be far better than remembering the doses. By that rule the above list has been determined.

The following is a rule for mentally finding out the amount of drug in each minim of tincture.

It will be noticed that the poisonous tinctures are 2, 5, 10, 15, 35, and 40 per cent. in strength. Whenever we say a tincture is 2, 5, 10, 15, 35, or 40 per cent. in strength, we are to understand in this connection, and for this purpose, that each 100 minims contain 2, 5, 10, 15, 35, and 40 grains of drug, and that *one* minim will contain $\frac{1}{100}$ of that amount.

Thus, *tincture of nux vomica* is a two-per-cent. tincture. It, therefore, contains two grains of drug in every 100 minims. *One* minim will contain $\frac{1}{100}$ of two grains, or $\frac{2}{100}$ of a grain, or $\frac{1}{50}$.

Tincture of strophanthus is a five-per-cent. tincture.

There are five grains of drug in every 100 minims of tincture. *One* minim will contain $\frac{1}{100}$ of five grains, or $\frac{5}{100}$ of a grain, or $\frac{1}{20}$ of a grain.

Tincture of opium is a ten-per-cent. tincture.

In each 100 minims there are ten grains of drug. In *one* minim there will be $\frac{1}{100}$ of ten grains, or $\frac{10}{100}$ of a grain, or $\frac{1}{10}$ of a grain.

Tincture of digitalis is a fifteen-per-cent. tincture. That is, each 100 minims contain fifteen grains of drug, and *one* minim will contain $\frac{1}{100}$ of fifteen grains, or $\frac{15}{100}$ of a grain, or about $\frac{1}{6}$ of a grain.

Tincture of aconite is a thirty-five-per-cent. tincture, each 100 minims holding thirty-five grains of drug. *One* minim holds $\frac{1}{100}$ of thirty-five grains, or $\frac{35}{100}$ of a grain, or about $\frac{1}{3}$ of a grain to each minim.

Tincture of veratrum viride is forty-per-cent., or 100 minims contain forty grains of drug. *One* minim, therefore, con-

tains $\frac{1}{100}$ of forty grains, or $\frac{40}{100}$ of a grain, or $\frac{4}{10}$ of a grain to each minim.

The further purpose of this rule for finding the amount of drug represented by each minim in a preparation will be shown at the end of the section on Preparations.

Definition.—In defining a tincture of any particular drug the following typical form is given:

What are tinctures of cinchona and opium?

Tincture of cinchona is an alcoholic or a dilute alcoholic solution of the soluble portions of cinchona bark. It is used as a tonic and an antipyretic.

Tincture of opium is an alcoholic or dilute alcoholic solution of the soluble portions of opium, the concrete milk-juice of the Eastern, or Oriental, poppy, each minim of which contains $\frac{1}{10}$ of a grain of opium.

Before passing on to the fluid extracts, we will consider the wines, which are a species of tincture.

WINES.

Latin Name, Vina Medicata. *English Name,* Medicated Wines.

A wine, as understood in the pharmacopeia, is a solution in sherry wine of the soluble principles of a drug. They differ from tinctures only in the menstruum used for making them. The acid in the wine may possibly dissolve out more completely the soluble principles than alcohol would.

Latin Name.	English Name.
Vinum antimonii, ...	Wine of antimony (contains tartar emetic, 2 grs. to f℥j).

Emetic, expectorant, diaphoretic. Dose, expectorant and diaphoretic, 10 to 30 ♏; emetic, 2 to 4 c.c., repeated every fifteen minutes.

LATIN NAME. ENGLISH NAME.

Vinum colchici radicis, ... Wine of colchicum root.
Alterative, antirheumatic. Dose, 0.650 c.c. to f℥j.

Vinum colchici seminis, ... Wine of colchicum seed.
Alterative. Dose, 30 ♏ to 8 c.c.

Vinum ergotæ, ... Wine of ergot.
Dose, for women in labor, from f℥j to f℥iij. Dose, for other purposes, from f℥j to f℥iv.

Vinum ferri amarum, ... Bitter wine of iron.
Tonic, antipyretic. Dose, f℥j or more, each fluidram equaling 2½ grs. of ferri et quinina citratis.

Vinum ferri citratis, ... Wine of ferric citrate.
Tonic. Dose, f℥j.

Vinum ipecacuanhæ, ... Wine of ipecac.
Emetic. Dose, f℥j, in portions of f℥j every five minutes. Expectorant and diaphoretic. Dose, 10 to 30 ♏.

Vinum opii, ... Wine of opium.
Anodyne. Dose, 10 to 20 ♏, equaling 1 to 2 grs. of opium.

FLUID EXTRACTS.

Latin Name, Extracta Fluida. *English Name*, Fluid Extracts.

A fluid extract is a concentrated alcoholic solution of the soluble portions of a vegetable drug.

They are made by percolation, a description of which process has already been given.

This is the most important class of all the medicinal preparations.

They possess two important advantages over all other preparations. First, they are concentrated to the smallest bulk possible consistent with a stable preparation. Second,

they are all alike in strength, one cubic centimeter of the fluid being equal to one gram of drug, or, putting it in our old familiar system of expression, practically one *minim* of the fluid extract equals one *grain* of the drug.

The dosage is thus rendered easier, the number of *grains* of drug used as a dose being the same as the number of *minims* of fluid extract to be used as a dose.

There are eighty-eight official fluid extracts, and, as a large number of them are very seldom used, only those commonly met with will be placed here, the complete list being placed in the appendix for reference.

Latin Name.	English Name.
Extractum aconiti fluidum, ...	Fluid extract of aconite, or monks-hood.

Sedative. Dose, ½ to 1 ♏.

Example.—What is fluid extract of aconite?

It is a concentrated alcoholic solution of all the soluble principles of aconite root, each minim of which represents one grain of the drug.

Extractum aromaticum fluidum, . . Aromatic fluid extract.
Cardamom, cassia, nutmeg, and ginger. Carminative. Dose, 10 to 20 ♏.

Extractum buchu fluidum, ... Fluid extract of buchu.
Diuretic. Dose, 2 c.c. to f℥j.

Extractum calami fluidum, ... Fluid extract of calamus (sweet-flag).
Carminative, stimulant. Dose, 5 to 15 ♏.

Extractum cascaræ fluidum, ... Fluid extract of cascara bark.
Tonic, cathartic. Dose, 15 ♏ to 8 c.c.

Note.—This fluid extract is official under the name of fluid extract of

rhamnus purshiana, under which title it will be found. Cascara sagrada is its commercial name, and the change to the scientific name is too recent to adopt without this precaution.

Latin Name.	English Name.
Extractum cimicifugæ fluidum, . .	Fluid extract of cimicifuga, or black snake-root.

Alterative. Dose, 2 to 4 c.c.

Extractum cinchonæ fluidum, . . . Fluid extract of cinchona, or Peruvian bark.

Tonic. Dose, 5 to 10 ♏.

Extractum cocæ fluidum, ... Fluid extract of coca-leaves.

Stimulant. Dose, 20 ♏ to 4 c.c.

Note.—This drug, co-*ca*, should not be confounded in pronunciation or thought with the substance used as a beverage, known as co-*coa*.

Extractum colchici radicis et seminis, Fluid extract of colchicum (both the root and seed).

Alterative, antirheumatic. Dose, 2 to 8 ♏.

Extractum convallariæ fluidum, . . Fluid extract of convallaria, or lily of the valley.

Heart sedative. Dose, 5 to 15 ♏.

Extractum digitalis fluidum, ... Fluid extract of digitalis, or foxglove.

Heart stimulant. Dose, ½ to 2 ♏.

Extractum ergotæ fluidum, ... Fluid extract of ergot.

Parturient. Dose, 2 to 15 c.c.

Extractum eriodictyi fluidum, . . . Fluid extract of eriodictyon, or yerba santa.

Tonic, expectorant, flavor. Dose, 20 ♏ to ʒj.

Extractum eucalypti fluidum, . . . Fluid extract of eucalyptus.

Stimulant, expectorant. Dose, 5 to 10 ♏.

Extractum frangulæ fluidum, . . . Fluid extract of frangula, or buckthorn bark.

Cathartic. Dose, 10 to 20 ♏.

Extractum gelsemii fluidum, ... Fluid extract of gelsemium (yellow jasmine).

Antispasmodic. Dose, 1 to 3 ♏.

LATIN NAME. ENGLISH NAME.

Extractum gentianæ fluidum, . . . Fluid extract of gentian.
Bitter tonic. Dose, 5 to 30 ♏.

Extractum glycyrrhizæ fluidum, . . Fluid extract of licorice root.
Expectorant. Dose, 5 to 30 ♏.

Extractum gossypii radicis fluidum, Fluid extract of cotton-root bark.
Emmenagogue. Dose, f℥ss to f℥j.

Definition.—Emmenagogues, medicines which stimulate the uterine muscular fiber and restore the menstrual function.

Extractum guaranæ fluidum, ... Fluid extract of guarana or paullinia.
Stimulant. Dose, f℥ss to f℥ij.

Extractum hydrastis fluidum, . . . Fluid extract of hydrastis, or golden-seal root.
Tonic, cathartic; it is also astringent. Dose, f℥j to 8 c.c.

Extractum hyoscyami fluidum, . . . Fluid extract of hyoscyamus, or henbane leaves.
Narcotic, sedative. Dose, 1 to 3 ♏.

Extractum ipecacuanhæ fluidum, . . Fluid extract of ipecac root.
Emetic. Dose, 15 to 30 ♏. Expectorant. Dose, 1 to 3 ♏.

Extractum jaborandi fluidum, . . . Fluid extract of jaborandi leaves, or pilocarpus.
Diaphoretic, sialagogue. Dose, 1 to 5 ♏.

NOTE.—This fluid extract, although much used, is not official under this name. Its active principle, pilocarpine, is much used in place of it.

Extractum nucis vomicæ fluidum, . Fluid extract of nux vomica.
Tonic. Dose, 3 ♏ = about $\frac{1}{20}$ of a gr. of strychnine.

NOTE.—This fluid extract, nux vomica, is the only one varying from the rule of strength adopted *for* fluid extracts. This drug varies very much from season to season in the amount of alkaloid present in it. Therefore its strength is based upon the amount of *alkaloid present*, the quantity of *drug used* being, in one sense, secondary.

LATIN NAME. ENGLISH NAME.

Extractum pilocarpi fluidum, . . . Fluid extract of pilocarpus, or jaborandi.
Diaphoretic, sialagogue. Dose, 1 to 5 ♏.

Extractum pruni virginianæ fluidum, Fluid extract of wild-cherry bark.
Sedative. Dose, 2 to 4 c.c.

Extractum rhamni purshianæ fluidum, ... Fluid extract of cascara bark.
Tonic, cathartic. Dose, 15 ♏ to f℥j.

Extractum rhei fluidum, ... Fluid extract of rhubarb root.
Cathartic, astringent. Dose, 5 ♏ to 2 c.c.

Extractum sarsaparillæ fluidum compositum, ... Compound fluid extract sarsaparilla.
Alterative. Dose, 30 ♏ to f℥j.

Extractum scillæ fluidum, ... Fluid extract of squill-bulb.
Expectorant. Dose, 1 to 3 ♏.

Extractum sennæ fluidum, ... Fluid extract of senna-leaves.
Cathartic. Dose, f℥j to 16 c.c.

Extractum spigeliæ fluidum, ... Fluid extract of spigelia, or pink root.
Vermifuge. Dose, with a cathartic, f℥ss to f℥ij.

Definition.—Vermi*fuges expel* worms from the intestinal canal. Vermi*cides* destroy them.

Extractum taraxaci fluidum, ... Fluid extract of dandelion root.
Laxative. Dose, f℥j to f℥iij.

Extractum uvæ ursi fluidum, . . . Fluid extract of uva ursi or bearberry.
Diuretic. Dose, f℥ss to f℥j.

Extractum valerianæ fluidum, . . . Fluid extract of valerian root.
Nerve stimulant. Dose, f℥j.

Extractum veratri viridis fluidum, . Fluid extract of veratrum viride root, or hellebore.
Depressant, cardiac, sedative. Dose, 1 to 2 ♏.

LATIN NAME. ENGLISH NAME.

Extractum viburni prunifolii fluidum, Fluid extract of viburnum (black haw).

Antispasmodic. Dose, f℥ss to 4 c.c.

Extractum zingiberis fluidum, . . Fluid extract of ginger.

Stimulant. Dose, 1 to 10 ♏.

It is believed the preceding list includes all the fluid extracts that are *commonly* met with. Let the student remember that with *all* the classes of preparations there are many used which are *not* official. To include these is beyond the scope of this work.

QUESTIONS TO CHAPTER VII.

What is a tincture?

Tell how a tincture is obtained by maceration.

Tell how a tincture is obtained by percolation.

What is tincture of aconite?

What is a narcotic?

Belladonna tincture is dosed at 15 to 30 ♏,—how many drops would that be?

What is a carminative?

Tincture of cinchona—what are its medicinal properties? Its dose is 4 to 16 c.c. How many teaspoonfuls in the first dose? How many tablespoonfuls in the second dose?

What is the dose of tincture of digitalis? What is digitalis? Medicinal properties of it?

What are the medicinal properties of tincture of ferric chlorid? What is the meaning of the term?

What is tincture of hyoscyamus? Properties? Dose?

Properties of tincture of ipecac and opium?

What is an anodyne?

Properties and dose of tincture of nux vomica?

What is tincture of opium? Properties and dose?

What is opium? How much of it in the minimum dose of the tincture?

Distinguish between the two samples,—which is tincture of opium and which paregoric?

Tell how you know the difference.

How does deodorized tincture of opium differ from laudanum?

What is the percentage strength of the opium tinctures, paregoric excepted?

How much opium in a teaspoonful of paregoric?

How much belladonna in a minim of the tincture?

How do you find out?

How much strophanthus in a minim of tincture?

How much cannabis indica in a minim of tincture? In twelve minims how much?

What is meant by a wine?

Properties of wine of ipecac?

What is an emmenagogue?

Dose of wine of colchicum root is 0.650 c.c,—how many mimims is it?

Maximum dose is f℥j,—how many c.c. is that?

What is the active ingredient in bitter wine of iron?

What is a fluid extract?

State why they are considered the most important class of all the preparations.

What is the strength of them?

Which of the fluid extracts vary from this rule?

What is the common name of fluid extract of eriodictyon, of pilocarpus, of rhamnus purshiana?

What are the Latin names of fluid extract of Peruvian bark, monkshood, henbane, deadly nightshade?

Dose of fluid extract of nux vomica?

Dose of fluid extract of ergot, senna, valerian, opium, convallaria, buchu?

Properties of fluid extract of aconite, belladonna, digitalis, foxglove, yellow jasmine, rhubarb, golden seal?

After this manner the teacher and the students among themselves may vary these questions on every occasion by substituting the names of other drugs.

CHAPTER VIII.

PREPARATIONS—(Continued).

OLEORESINS.

Latin Name, Oleoresinæ. *English Name*, Oleoresins.

An oleoresin is a substance which has been dissolved out of a drug by percolating the drug with ether. Afterward the ether is evaporated. They are heavy fluids.

Only two out of the six official ones are ordinarily used, but all are given.

LATIN NAME. ENGLISH NAME.

Oleoresina aspidii, ... Oleoresin of aspidium, or male fern (the root).

Teniacide. Dose, f℥ss to f℥j.

This oil deposits on standing a greenish-white precipitate. Before pouring it from the bottle for use it should be thoroughly mixed by stirring, for the deposit is the active principle.

Oleoresina capsici, ... Oleoresin of capsicum, or cayenne pepper.

Stimulant, rubefacient. Dose, ¼ to 1 ♏ (external use).

Definition.—Rubefacients belong to the class of irritants which act sufficiently to redden the skin, but *not* to blister.

Oleoresina cubebæ, ... Oleoresin of cubeb (berries).

Stimulant, special tendency to the urinary function. Dose, 5 to 30 ♏ on sugar.

Oleoresina lupulini, ... Oleoresin of lupulin (dust from hop-flowers).

Tonic, narcotic. Dose, 1 to 5 ♏ on sugar.

LATIN NAME. ENGLISH NAME.

Oleoresina piperis, ... Oleoresin of pepper (berry).
Stimulant. Dose, ¼ to 1 ♏ on sugar.

Oleoresina zingiberis, ... Oleoresin of ginger (root).
Stimulant, carminative. Dose, 1 to 5 ♏ on sugar.

VINEGARS.

Latin Name, Aceta. *English Name*, Vinegars.

The official vinegars are a sort of tincture made by macerating or percolating a drug with diluted acetic acid or vinegar.

They are, therefore, solutions in vinegar of the soluble portions of a drug.

Certain drugs yield up their active principles better to vinegar than they do to alcohol.

LATIN NAME. ENGLISH NAME.

Acetum opii, ... Vinegar of opium.
Narcotic. Dose, 10 ♏, equaling 1 gr. of opium.

Acetum scillæ, ... Vinegar of squill.
Expectorant, emetic. Dose, 5 ♏ to ʒj.

EXTRACTS—SOLID EXTRACTS.

Latin Name, Extracta. *English Name*, Extracts.

The extracts are made by carefully evaporating the fluid extracts at a low heat to avoid burning until they are reduced to what is called a pilular consistence, which means until a small piece rolled into globular form will retain its shape.

They are very apt to be more or less injured by overheating, and their strength can only be determined by their physiologic action. As a rule, we may assume them to be

four times the strength of the drug they represent, and therefore ¼ of a grain of extract would be equal to one grain of drug. They are used in pill and suppository form only, and as the nurse does not prepare either of these forms of medicament, they will not be listed here. For reference they will be found in the Appendix.

RESINS.

Latin Name, Resinæ. *English Name*, Resins.

The resins, at least the *official* resins, are active principles of the drugs they are taken from.

They are separated from the drugs containing them by percolating the drug with strong alcohol. When this is mixed with water, the resin, which will not dissolve in water, is thrown out of solution and separated by filtration and drying.

They are all used in pill form, but the number of them is small and all are listed here.

Latin Name.	English Name.
Resina copaibæ, ...	Resin of copaiba.
Urethral stimulant. Dose, 10 to 20 grs.	
Resina jalapæ, ...	Resin of jalap.
Cathartic. Dose, 2 to 5 grs.	
Resina podophylli, ...	Resin of podophyllum.
Cathartic. Dose, $\frac{1}{20}$ of a gr., repeated.	
Resina scammonii, ...	Resin of scammony.
Cathartic. Dose, 4 to 8 grs.	

Note.—These resins, with the exception of podophyllum, are not much used separately, but mixed with other drugs in pill form.

POWDERS.

Latin Name, Pulveres. *English Name*, Powders.

Some drugs, the dose of which is small and the taste not disagreeable, are conveniently given in powder form. Whenever a powder is compound in its makeup, consisting of two or more powders mixed together, they should appear, upon close examination, as one uniform powder, perfectly mixed and indistinguishable one from the other.

LATIN NAME. ENGLISH NAME.

Pulvis antimonialis, ... Antimonial powder, James's powder.
Alterative. Dose, 1 to 10 grs.

Pulvis aromaticus, ... Aromatic powder.
Cardamom, cinnamon, nutmeg, and ginger. Carminative. Dose, 1 to 10 grs.

NOTE.—A mixture of aromatic powder, with the addition of a small portion of capsicum and clove, made into the form of a poultice, is sometimes applied to the epigastrium as a counterirritant in cases of nausea. It is called a spice poultice.

Pulvis cretæ compositus, ... Compound chalk powder.
Chalk, gum Arabic, sugar. Diarrhea. Dose, 15 grs. to ʒj.

Pulvis effervescens compositus, . . Compound effervescing powder (Rochelle powders, Seidlitz powders).

Blue paper, ... Tartaric acid, . . . 35 grs.
White paper, . . { Sodium bicarbonate, 40 grs.
{ Rochelle salt, . . . 120 grs.

Two powders mixed constitute one dose. The Rochelle salt is the cathartic portion. The tartaric acid with the sodium bicarbonate causes the effervescence. In mixing, dissolve the contents of the blue paper in a tumbler one-third filled with water, and the contents of the white paper in another tumbler one-third filled with water. Mix the two solutions, and, after the *violent* effervescence has ceased, drink.

Laxative. Dose, 1 blue and 1 white powder.

LATIN NAME. ENGLISH NAME.

Pulvis glycyrrhizæ compositus, . . Compound powder of glycyrrhiza (compound licorice powder).

Mother powder, German powder. Senna, sulphur, cathartics; licorice, sugar, sweetening; fennel-seed, carminative. Cathartic. Dose, 30 to 60 grs.

Pulvis ipecacuanhæ et opii, ... Powder of ipecac and opium (Dover's powder).

Ipecac, 1 part; opium, 1 part; sugar of milk, 8 parts. Diaphoretic, anodyne. Dose, 10 grs., equaling 1 gr. of opium and 1 gr. of ipecac.

Pulvis jalapæ compositus (pulvis purgans), ... Compound jalap powder.

Jalap, cream of tartar. Cathartic. Dose, 30 to 60 grs.

Pulvis morphinæ compositus, . . . Compound powder of morphine (Tully's powder).

Morphine, camphor, licorice, chalk. Anodyne. Dose, 10 grs.; contain ⅙ of a gr. of morphine sulphate.

Pulvis rhei compositus, ... Compound powder of rhubarb.

Rhubarb, magnesia, and ginger. Cathartic. Dose, 30 to 60 grs.

TRITURATIONS, TABLET TRITURATES.

Latin Names, Triturationes, Tabletæ. *English Names*, Triturations, Tablets.

Triturations may be in the form of powders, or tablets, which are compressed powders. They are composed usually of medicines the dose of which is very small and inconvenient to handle. They are, therefore, mixed or triturated with sugar of milk, an inert substance, in sufficient quantity to increase the size of the powder or tablet.

CONFECTIONS.

Latin Name, Confectiones. *English Name*, Confections.

Confections are powdered vegetable drugs mixed with honey, sugar, and spices to a pasty consistence.

LATIN NAME. ENGLISH NAME.

Confectio rosæ, ... Confection of rose.

Rose-leaves, sugar, honey, rose-water; used to mix unpleasant medicines with.

Confectio sennæ, ... Confection of senna.

Senna, purging cassia, figs, prunes, tamarinds, coriander. Cathartic. Dose, ʒ ij or more.

PILLS.

Latin Name, Pilulæ. *English Name*, Pills.

Only such pills as are commonly used are placed here. The ingredients of pills are usually indicated by their titles.

LATIN NAME. ENGLISH NAME.

Pilulæ catharticæ compositæ, . . . Compound cathartic pills.

Compound extract of colocynth, calomel, extract of jalap, gamboge. Cathartic. Dose, 1 to 3 pills.

Pilulæ catharticæ vegetabiles, . . . Vegetable cathartic pills.

Compound extract of colocynth, extract of hyoscyamus, extract of jalap, extract of leptandra, resin of podophyllum, and oil of peppermint. Cathartic. Dose, 1 to 3 pills.

Pilulæ ferri carbonatis, ... Pills of carbonate of iron (Blaud's pills).

Ferrous sulphate, potassium carbonate. Alterative. Dose, 1 pill.

When these pills are mixed *carbonate* of iron is formed, from the sulphate. In the *improved* Blaud's pills there is also $\frac{1}{60}$ of a grain of arsenous acid.

LATIN NAME. ENGLISH NAME.

Pilulæ opii, ... Opium pills.
Narcotic, anodyne. Dose, 1 containing 1 gr.

Pilulæ rhei compositæ, ... Compound rhubarb pills.
Rhubarb, aloes, myrrh, oil of peppermint. Cathartic. Dose, 3 pills.

CERATES. OINTMENTS. PLASTERS.

Latin Name, Cerata. *Latin Name*, Unguenta. *Latin Name*, Emplastra.

These consist of medicines mixed with fats, wax, resin, vaselin, lanolin, and oils. Sometimes with one, sometimes with several.

A cerate, as distinguished from an ointment, will remain upon the surface of the body without melting.

An ointment melts at the body temperature.

A plaster is made adhesive, so that when applied to the body it not only does not melt, but adheres or sticks to the spot where it was first placed. The names usually indicate the active ingredient.

QUESTIONS TO CHAPTER VIII.

What are oleoresins?
What is oleoresin of male fern used for?
What is a rubefacient? Which of the oleoresins are rubefacient? Which are teniacidal?
What is a teniacide?
How do vinegars differ from tinctures?
How are extracts obtained?
What is their strength? In what form are they mostly used?
What are the medicinal properties and what is the dose of resin of podophyllum? How many milligrams would represent that same dose?
What is aromatic powder made of?

What is a spiced poultice made of?
What do Rochelle powders consist of?
Give their official title.
What is the dose of German powder?
What is its official name? Its ingredients?
What is Dover's powder made of?
In what proportions are the ingredients?
How would you judge when the powder had been sufficiently well mixed? Dose of it? How much opium in a dose?
What is a narcotic? an anodyne? a diaphoretic?
What is Tully's powder? Is ʒj of it a safe dose?
Why do you suppose oil of peppermint is used as an ingredient in compound rhubarb powder?
How do triturations and tablets differ?
What is a confection?
What is confection of senna made of?
What do compound cathartic pills contain?
How much opium in an official opium pill?

CHAPTER IX.

DOSAGE.

In studying the drugs and their preparations the student can not have failed to notice what was said in the beginning: that it is more often the preparation of the drug than the drug itself that is used; so that the number of doses to be remembered is very great, and an aid to the memory is very acceptable.

We may place all the vegetable drugs in three classes:

Those of the first class are given in doses of from ½ to 2 grains (0.030 to 0.130 gm.).

Those of the second class are given in doses of from 1 to 3 grains (0.065 to 0.195 gm.).

And all others, constituting the majority, in the third class, which are given in doses of from 5 to 30 grains (0.325 to 2 gm.).

The first class are seven in number and are easily committed to memory by a little drilling. The dose is from ½ to 2 grains, or 0.030 to 0.130 gm. (which is read as 30 and 130 milligrams).

Aconite root.
Cantharides.
Cochineal.
Digitalis.
Opium.
Physostigma.
Strophanthus.

They have been arranged alphabetically, which is the best way to memorize them, being orderly.

Class two comprises the drugs given in doses of from 1 to 3 grains, or 0.065 to 0.195 gm.

It will not be necessary to commit this list to memory. After reading it over several times, if you thoroughly learn the *first* list, you will easily be able to tell the class to which a drug belongs, and, knowing this, you know the *dose*.

The more common ones are designated by *italics*.

Aloes.
Belladonna (*leaf and root*).
Camboge.
Cannabis indica.
Capsicum.
Colocynth.
Conium.
Gelsemium.
Hyoscyamus.
Ipecac.
Lobelia.
Musk.
Nux vomica.
Pulsatilla.
Rhus toxicodendron.
Savin.
Squill.
Stramonium.
Tobacco.
Veratrum.

Class three includes all other official drugs, and they are given in doses of from 0.325 to 2 gm., or 5 to 30 grs.

ERRATUM.

Page 77, beginning at sentence, "What is the dose of tincture of aconite?" For *aconite* read *digitalis*.

It includes such familiar drugs as

Gentian.
Cinchona.
Cardamom.
Calumba.
Orange-peel.
Benzoin.
Cinnamon.
Guaiacum.
Hops.
Myrrh.
Rhubarb.
Tolu.
Valerian.

We have already been told how, by knowing the percentage strength of a preparation, we may find out how much of the drug there is to the minim; and let us see now if we can use that rule in connection with the classes of drugs just given.

What is the dose of tincture of aconite?

It is a fifteen per cent. tincture; 100 minims of it contain 15 grains of drug; 1 minim of it contains $\frac{1}{100}$ of 15 grains, or $\frac{15}{100}$ of a grain, which, reduced to its smallest denomination, is *about* $\frac{1}{6}$ of a grain to a minim.

The dose of aconite itself, belonging to our first class, is from $\frac{1}{2}$ to 2 grains. One minim of the tincture contains $\frac{1}{6}$ of a grain; 3 minims contain $\frac{3}{6}$ or $\frac{1}{2}$ of a grain; 12 minims contain $\frac{12}{6}$ or 2 grains. So, by our table and our rule, we find that the minimum dose of tincture of aconite is 3 minims and the maximum is 12 minims.

Practice will quickly enable one to do this mentally with no perceptible effort. Sometimes we, knowing the percentage

strength of a preparation, wish to know *about* how much substance there is in a fluidounce.

Multiply the figure representing or standing for the percentage strength by 5, and the product is *about* the number of grains to the ounce.

For instance: How much rhubarb is being given in a tablespoonful of the tincture? The tincture is a ten per cent. tincture. Five times 10 are 50. The tincture contains *about* 50 grains of rhubarb to 1 ounce, or 25 grains to a tablespoonful. According to our third class of drugs that is about the right dose.

How much opium is given in a tablespoonful of paregoric?

It is $\frac{4}{10}$ of 1 per cent. Five times $\frac{4}{10}$ are $\frac{20}{10}$, or 2 grains of opium to the ounce. This makes 1 grain of opium to each half ounce, or tablespoonful. Our maximum dose is 1 grain, and *that* is all right.

Now, sometimes we know how many grains there are to an ounce of a preparation, and we wish to know its percentage strength.

Having a solution of boric acid, for instance, made with 4 drams to the pint, what is its percentage strength?

Divide the number of grains to the ounce by 5. The quotient will be the figure standing for the percentage strength.

Four drams of boric acid to a pint are 15 grains to 1 ounce.

Divide 15 by 5 and we have 3 as representing the percentage strength of our boric-acid solution.

Let the nurse remember these are rules of *approximation* only, and they are very handy sometimes after she gets out into private practice, away from all kinds of measures except water-pails, tin dippers, and pewter spoons. No one can

realize more acutely than the author does the necessity for *accuracy*, and yet we are obliged sometimes to depend upon our wits.*

The following table shows the percentage strength of some of the more important tinctures with these rules applied:

TABLE OF PERCENTAGE STRENGTH SHOWING THE APPLICATION OF THE PRECEDING RULE.

NAME.	STRENGTH.	GRAINS TO OUNCE (MULTIPLY STRENGTH BY 5).	QUANTITY TO MINIM (DIVIDE STRENGTH BY 100).
Paregoric,	$\frac{4}{10}$ of 1 per cent.	$\frac{20}{10}$ or 2 grs.	Unimportant.
Tincture nux vomica,	2 per cent.	10 grs.	$\frac{1}{50}$ gr.
Tincture strophanthus,	5 per cent.	25 grs.	$\frac{5}{100}$ or $\frac{1}{20}$ gr.
Tincture opium, Deodorized tincture of opium, Compound tincture of cinchona, Compound tincture of gentian,	āā 10 per cent.	50 grs.	$\frac{10}{100}$ or $\frac{1}{10}$ gr.
Tincture of belladonna, Tincture of cannabis indica, Tincture of colchicum, Tincture of hyoscyamus,	āā 15 per cent.	75 grs.	$\frac{15}{100}$ or $\frac{1}{6}$ gr.
Fluid extracts,	100 per cent.	500 grs.	1 gr. to the minim.

* According to the view of the author, it is far better in these matters to be governed by rule than to trust to the memory alone.

QUESTIONS TO CHAPTER VIII.

Name all the drugs dosed at from ½ to 2 grains.

What are the metric equivalents of those numbers?

What are the doses of ipecac, belladonna, opium, gentian, digitalis, hyoscyamus, cinchona, gelsemium, jalap, nux vomica?

What are the doses of tincture of aconite, tincture of opium, paregoric, fluid extract of ergot?

How much opium in a teaspoonful of paregoric?

How much in ten minims of tinct. opii?

You know the dose of belladonna and of digitalis; also the percentage strength of tinctures and fluid extracts: then how much belladonna in twelve minims of the tincture and how much digitalis in thirteen minims of the fluid extract?

Give the rule for finding how much drug there is in a fluidounce of a preparation when you know the percentage strength.

When you know the number of grains in an ounce of any fluid, how do you obtain the percentage strength?

Name all of the ten and all of the fifteen per cent. tinctures.

SECTION II.

CHEMISTRY.

CHAPTER I.

INTRODUCTORY, ELEMENTS, AND ACIDS.

"Chemistry is that branch of science which treats of the composition of substances and the changes which they undergo" (Webster).

Many substances which appear to consist of one thing only, in reality consist of two or more substances chemically united.

All material substance, whether gaseous, fluid, or solid, palpable or impalpable, is either simple or compound; that is, consists of a *single*, simple, undecomposable substance or of *several* such substances united.

Simple substances are called elements. An element is a created substance which can not be decomposed by any of the powerful forces at the command of man.

A substance that is simple and single only in *appearance*, *may* be decomposed by those forces.

It is the peculiarity of the force called chemic force that the substances upon which it is exerted in uniting together become lost to all of our common senses and exhibit qualities

differing altogether from the qualities of the substances of which they are composed.

In theory, that the teacher may be able to convey and the pupil to receive ideas, substance is looked upon *not* as a structureless mass, but as being made up of atoms, held together by *chemism;* like, in a manner, as the magnet and piece of steel are held together, or like the force of gravitation, which holds everything upon the earth to it.

Atoms are imaginary bodies incapable of being divided by man.

NOTE.—Pupils and, indeed, teachers also, meet with a great deal of difficulty in comprehending this indivisibility of a substance having size. But we may comprehend it with a little application. First, God is able to divide or destroy an atom, but *man* can not do so. The moon, we know, has appreciable size, and we know it to be divisible; but can we divide it? Come closer home: could all humanity pile one-fourth part of the earth in a heap and force it off into space? No; it is beyond our power. Does it argue atoms out of existence because we can not see them, when we know of so many miscroscopic bodies which must have been in existence since creation but which even *with* our miscroscopes are invisible until stained? There are good and sufficient reasons for accepting such a theory; without it we could not teach. Through some unexplored way, by some undiscovered light, we may yet see them; but even then we can not divide them, for the power is not ours to handle them.

These atoms in groups are called molecules. A molecule is a collection or group of two or more atoms.

Let us consider the two substances, sulphur and water. Examine each as closely as possible and we should pronounce them to be, the one, a simple substance consisting of no other substance but sulphur, and the other a simple fluid consisting of no other substance whatever but water.

Light does not affect either of them. Heat melts the sulphur, boils the water, finally vaporizes both, and, if the fumes or vapor of each are conducted into a cool chamber, both will be recovered again in their original forms. During the process each has temporarily undergone a change of form, but nothing further.

Force applied does not affect the water, but the sulphur may be reduced to a powder of microscopic fineness; each particle, however, is still sulphur.

Let us turn to our last resort. Electricity applied to sulphur results in no change; applied to water, we are astonished to see it separate into two gases, hydrogen and oxygen.

Now all our force has been used up.

We pronounce sulphur to be an element, because we can not find that it consists of anything else *but* sulphur.

Water is a compound, made up of *two* elements, and we may separate them and discover them to be gases; but the two gases will *not* yield to our forces, so *they* are elements.

The elements of interest in connection with materia medica are in the following list. Most of them are used in combination with other elements, as salts. But a few are used in their elementary state. Those are italicized, and the manner of their use noted. The symbols for each are given. Symbols are the short-hand characters of chemicals, and save a great deal of time to teachers and calculators. To write out, for instance, how ether is formed would require a whole page of this book, but the same could be expressed in symbolic form in one line.

Boron—B.

Calcium—Ca.

Carbon—C. (Familiar as charcoal.)
Cerium—Ce.
Chlorin—Cl. (As chlorin water.)
Chromium—Cr.
Copper—Cu.
Gold—Au.
Hydrogen—H
Iodin—I. (Iodin ointment and tincture.)
Iron—Fe. (Powdered and in pill form.)
Lead—Pb.
Lithium—Li.
Magnesium—Mg.
Manganese—Mn.
Mercury—Hg. (Blue pill, gray powder, mercurial ointment.)
Nitrogen—N.
Oxygen—O. (Inhalation.)
Phosphorus—P. (Elixir.)
Potassium—K.
Silicon—Si.
Silver—Ag.
Sodium—Na.
Strontium—Sr.
Sulphur—S. (Compound licorice powder, sulphur and cream of tartar.)
Zinc—Zn.

It is not necessary to *learn* these for recitation; but become familiar with them so they will be recognized whenever seen.

The order in which the chemicals will be treated, is that adopted by all the leading pharmaceutical colleges of the country.

We will consider, first, the class of chemicals called inorganic.

NOTE.—The division of chemicals into inorganic and organic was adopted because the limited knowledge of chemistry at that time admitted

of nothing else. Inorganic elements and compounds were derived from the mineral world. Organic elements and compounds from the organic world of vegetable and animal organisms. The division was, at the time, sharp, because it was supposed that the power to produce the organic compounds resided in the bodies where they were formed, and that they could not be artificially produced. Since that time the supposition has fallen, and now we artificially prepare many substances which at that time could *not* be prepared. The reason for the division has disappeared, yet the division is still retained, and is convenient in several respects.

Owing to the important part which oxygen, hydrogen, and nitrogen play in the phenomenon of our existence they will receive attention first.

NOTE.—It is, of course, advised that whenever possible the students should be shown these three gases, their separation in the simplest way, and some simple experiments to show the difference between substances having *no* difference to our *common* senses, and, in fact, no *existence* to them; and also to impress at the outset on the minds of the students that many substances appearing to be simple are in reality compound.

The air we breathe is made up of a mechanical mixture of four-fifths nitrogen and one-fifth oxygen.

The water we drink is made up, numerically speaking, of two parts of hydrogen and one of oxygen, chemically combined.

By oxygen, more than by any other element, we live, because we use more of it, apparently, than we do of any other element.

Created as we are, we could not live without it. We could not live upon *pure* oxygen. The nitrogen present with it serves to dilute it and to reduce it to a form acceptable to our lungs.

In water the hydrogen present not only again dilutes, in

one sense, the oxygen, but in uniting with it presents it in a new physical form, entirely unsuited to inhale into our lungs, but quite as acceptable to our stomachs in the form of water as it is to our lungs in the form of air.

A great deal of time and money has been spent in the endeavor to decompose these elements, but thus far without success. It is only in very recent years that they have been reduced first to a fluid and then to a solid form, and this under enormous pressure and at a temperature many degrees below the freezing-point.

Oxygen, hydrogen, and nitrogen are colorless, odorless, and tasteless gases. Oxygen, in uniting with other substances, does not burn, but is the cause of the phenomenon called burning, and is, therefore, called a supporter of combustion. It supports life.

Hydrogen is combustible; that is, in uniting with oxygen it blazes or burns. It will not support life. It is not poisonous, but we should die in an atmosphere of it, because we need oxygen.

Nitrogen neither burns nor supports combustion, nor does it support life. It is not poisonous. It serves to dilute the oxygen of the air, and without doubt serves some other beneficent purpose, none the less important for our not knowing just what it is.

It has been already stated that *all* chemic compounds may be called *salts*. There are some salts which, having strongly marked properties, are distinguished by special names, alluding to one of those properties. Such are the salts of hydrogen. They have as their distinguishing feature a sharp taste, and from the Latin word *acer*, meaning sharp, their name has been derived. They are called acids.

Generally speaking, the acids may be described by their physical properties. Some of them are fluid and some are solids. They are sour to the taste. They are more or less corrosive in their action upon the animal tissues and they turn blue vegetable colors red.

All salts, when brought together, are prone to change and form new salts; but the acids possess this power of changing other salts in a greater degree. And so, as *one* of their peculiar properties, we say that they unite with other elements and form salts, and also they react with other salts to form new ones.

The following list includes those medicinal acids which are commonly met with and about which the nurse should know something:

LATIN NAME. ENGLISH NAME.

Acidum aceticum, ... Acetic acid. H. ($C_2H_3O_2$).

This acid is made by distilling wood. When it unites with elements to form salts or when it decomposes other salts, the salt formed is called an acetate.

Definition.—Distillation has been already defined. Here it is put to another use. Wood contains within its structure a large number of chemic compounds, and when it is heated they decompose one another. When wood is distilled, one of the products of the heating, if the temperature is maintained at a certain degree, is acetic acid. The form known as vinegar is made by fermenting cider. It is used for culinary purposes and as a condiment. For chemic purposes and as a medicine that obtained from wood is used, because it is purer.

Acidum arsenosum, ... Arsenous acid. As_2O_3.

Arsenic itself is a metal. By roasting metallic arsenic it unites with oxygen and becomes arsenous acid. It is a heavy white powder. It forms the salts called arsenites.

LATIN NAME. ENGLISH NAME.

Acidum boricum, ... Boric acid. $H_3(BO_3)$.

When hydrochloric acid is caused to react with borax, boric acid is formed. Antiseptic.

Acidum citricum, ... Citric acid. $H_3(C_6H_5O_7)$.

It is obtained from lemon juice which has been clarified by chemic treatment and evaporating the solution. It occurs in colorless crystals. In chemic combination with other things it forms the salts called citrates.

NOTE.—*Chemic Formulæ.*—The groups of symbols show the elementary substances and their proportions, which make up the compound. The nurse has no need to learn them. They will recall to her mind the fact that although substances may *appear* simple enough, they are nevertheless compound. To those who care to know, the elements within the brackets are the sign of the acid in question. The element on the left is the element with which the acid unites to form a salt. The group $(C_6H_5O_7)$ is present in all citrates. United with potassium, it would be written $K_3(C_6H_5O_7)$; with sodium, $Na_3(C_6H_5O_7)$; and form potassium and sodium citrates.

NOTE.—*Evaporation.*—When it is desirable to separate a substance from solution we evaporate the solution until a crust begins to form on the surface. If then the solution be set aside in a cool, quiet place, the substance will crystallize.

Acidum hydriodicum, ... Hydriodic acid. H(I).

It is a compound made from iodin. It forms the class of salts called iodids. It is familiar to you in the form of syrup of hydriodic acid.

Acidum hydrochloricum, ... Hydrochloric acid, or muriatic acid. H(Cl).

When sulphuric acid is caused to react with common salt, which is sodium chlorid, hydrochloric acid is one of the products of the decomposition. When pure it is a colorless, fuming fluid. The commercial acid is yellow, due to the presence of iron and other impurities. It forms the class of salts called chlorids.

Acidum hydrocyanicum, ... Hydrocyanic or prussic acid. H.(CN).

This is the product originating from the decomposition of refuse animal matter with potash and scraps of iron. It is one of the most powerful poisons known. It is a colorless fluid having an odor resembling that of bitter almonds or peach meats. It forms the class of salts called cyanids.

LATIN NAME. ENGLISH NAME.

Acidum nitricum, ... Nitric acid. $H.(NO_3)$.

When the salt called sulphuric acid is caused to act upon potassium nitrate (two salts acting upon each other), one of the products of the reaction is nitric acid. This is a colorless, fuming fluid. It is very corrosive to the skin, staining it with an ineradicable yellow stain. It is destructive to all vegetable colors. It forms the class of salts called nitrates.

Acidum sulphuricum, ... Sulphuric acid (oil of vitriol). $H_2(SO_4)$.

The fumes of burning sulphur are conducted into a chamber of steam and freshly formed oxygen gas. The three substances unite and sulphuric acid is formed. It is a heavy, oily, colorless fluid. This acid also is very corrosive to the skin, and if not washed off very soon will cause deep ulcers, very difficult to heal.

Acidum oxalicum, ... Oxalic acid. $H_2(C_2O_4)$.

This acid is formed when sawdust, potassium hydrate, and sodium hydrate are roasted together. It is not an official acid, but it is used very extensively in antiseptic surgery by operators and nurses in cleansing the hands. It forms the class of salts called oxalates. It occurs in transparent or semitransparent crystals, and great care should be observed that it be not mistaken for Epsom salt, which it somewhat resembles in appearance.

Acidum tannicum, ... Tannic acid.

There grows upon the leaves of different varieties of oak an excrescence which is called nutgall. Tannic acid is obtained by percolating these nutgalls with ether. The ether being evaporated to a syrupy consistence, the tannic acid separates after drying. It is a light, yellowish, amorphous powder, sometimes cohering into glistening lumps, having very slight odor and an astringent effect in the mouth. It forms the class of salts called tannates.

NOTE.—Amorphous, from two Greek words meaning without and form. It is used to describe those substances which have no apparent structural form; starch is amorphous; sugar is crystalline.

Acidum tartaricum, ... Tartaric acid. $H_2(C_4H_4O_6)$.

Cream of tartar is the source of tartaric acid. It is formed or deposited in the casks in which grape-juice is fermented in the making of wine. When this cream of tartar, which is a tartrate of potassium, is changed

to tartrate of lime and is acted upon by sulphuric acid, tartaric acid is formed. It occurs as a white, crystalline powder, having no odor and a sharply acid taste. It forms the class of salts called tartrates.

QUESTIONS TO CHAPTER I, SECTION II.

What is chemistry?

What is a simple substance?

What is a compound substance?

Name the elementary substances which are used as medicines in their elementary form.

What is organic, what inorganic, chemistry?

State briefly the part oxygen plays in the economy of nature.

How may an acid be generally described?

What is citric acid obtained from?

What is the official title of prussic acid?

What is the official title of muriatic acid?

What is the official title of oil of vitriol?

What is the source of tannic acid?

CHAPTER II.

THE ALKALIES AND ALKALINE EARTHS.

The following salts have not, as the acids have, those very apparent distinguishing features which would warrant their being placed by themselves, and they will be taken in their usual order, which is established according to certain chemic resemblances.

The class coming first, although they do not possess as marked properties as the acids do, yet are called the alkali metals, because they form, as hydrates, salts which are in some respects what might be called the *opposites* to acids ; whereas acids turn blue litmus-paper red, alkalies restore it again to blue. Acids are sour ; alkalies have the taste which is familiar to those who have tasted pure soap. The acids and alkalies neutralize each other, and when mixed in the proper proportions have no effect upon litmus-paper. When all these differences were first noted, before it was understood exactly what they signified, it appeared as though one were as distinguished among salts as the other, and the distinguishing name alkali has clung to them.

The metals constituting this group, and called the alkali metals, are the elements potassium, sodium, and lithium, and the compound ammonia. There are others, but these are the only ones of importance in this connection. They unite with all the acids to form salts.

Source.—The potassium present in all vegetable structures

is converted into potassium carbonate when the wood is burned. From this all the other compounds of potassium are obtained directly or indirectly.

Sodium is present in sea-water as sodium chlorid, commonly known as salt. From this sodium chlorid all the other compounds of sodium are obtained indirectly.

Ammonia in the form of gas is generated along with illuminating gas in the distillation of coal in the manufacture of that substance. From it all the ammonium salts have their origin.

Lithium occurs in ores in association with many of the more common metals.

Potassium is an element with the symbol K, standing for the Latin name of potassium, which is kalium.

Sodium is an element with the symbol Na, standing for the Latin name of sodium, which is natrium.

NOTE.—The names potassium and sodium are of English origin. They have been Latinized, and in all English-speaking countries have superseded the old words kalium and natrium. But as the latter are used by all *other* nations, both are properly given.

Potassium: from pot-ash, because the accumulations of wood *ashes* from the hearth were placed in a large iron *pot* kept for the purpose. These pot-ashes, when washed with water, yield up the potash from its impurities. Hence the name.

Soda-ash: from the fact that in England it was obtained by burning the *seds* of marine- or salt-water plants and yielded sod-ashes. The substance, when washed, yields soda-ash, which has been contracted to soda, the same as potash has to potassa.

Ammonium is not an element, but it was long supposed to be one, and, as it forms salts with acids, it has been allowed to remain in the class of elements. It really consists

of two elements, nitrogen and hydrogen, and the symbols of those two elements, with a number indicating the amount of hydrogen, constitutes the formula for ammonium, (NH_4).

Lithium is found naturally in several forms. Its symbol is Li.

When these elements are caused, under the proper conditions, to unite with the various acids, they yield the corresponding salts.

And thus we have, by the action of acetic acid, potassium, sodium, and ammonium acetates.

And similarly we have the—

Carbonates, from carbonic acid.
Bicarbonates, from carbonic acid and water.
Bromids, from hydrobromic acid.
Chlorids, from hydrochloric acid.
Citrates, from citric acid.
Cyanids, from hydrocyanic acid.
Hydrates, from water, or hydrogen hydrate.
Hypophosphites, from hypophosphorous acid.
Iodids, from hydriodic acid.
Nitrates, from nitric acid.
Permanganates, from manganic acid, and the
Sulphates, from sulphuric acid.

The more common of these salts will receive further attention in another chapter.

NOTE.—In speaking of these chemicals there is only one proper way, and that is the way of the pharmacopeia. In the complete list of drugs and chemicals to be found in the Appendix the words will be found syllabled and accented.

In speaking of these salts we use the word indicating which acid has been used as a noun applied to a whole class of salts, and speak of the

citrates, the bromids, the sulphates, etc. The other word—the word which indicates what it is that the acid has united with—is used as an adjective, and just as we say a porcelain cup, an iron pot, a tin kettle, a silver spoon, instead of a cup of porcelain, a pot of iron, a kettle of tin, or a spoon of silver, when speaking of cups, pots, kettles, and spoons, so, in speaking of the citrates, the bromids, or the sulphates, we say potassium *citrate*, sodium *bromid*, ammonium *sulphate*, instead of citrate of potassium, bromid of sodium, or sulphate of ammonium. You would not dream of seriously reporting a patient as suffering with a fractured tib in place of a fractured tibia. You *do* speak of typhoid instead of typhoid fever; but you might just as well speak of scarlet in place of scarlet fever. So with these chemical names, as there are many bichlorids, some poisonous and some not; as there are several caustics, each differing from the other, it is proper to speak of these things by their proper and unabbreviated names, and signify *which* bichlorid and *which* caustic is wanted.

The ores of the second class are called the alkaline earths.

Magnesium and Calcium.—Both of these elements are of mineral origin, and the salts of them are formed by combination with the various acids.

NOTE.—It often happens that the salts of these substances are formed by a very roundabout process. One of these processes will be given here, to show how impossible and unnecessary it is for a nurse who has not had some previous instruction in chemistry to burden her mind with them, and then a common definition, which may be given for all, and which will sufficiently show how they are made, or, rather, what they consist of.

To illustrate the first fact, and the second also, we will select magnesium oxid. Magnesium occurs native as a carbonate or as a hydrate, accompanied by other substances, and to separate the magnesium from its various impurities and convert it into an oxid we proceed as follows:

The ore containing lime is treated with sulphuric acid, which forms magnesium sulphate and separates the lime. This magnesium sulphate is converted into the carbonate by treatment with sodium carbonate, which

at the same time separates any iron present. This magnesium carbonate is heated to redness and magnesium oxid is obtained. That is very simply but incompletely told. Now, if a nurse were asked how magnesium oxid is obtained, or what it is, she might say: It is a compound, as its name shows, of magnesium and oxygen, made by heating magnesium carbonate to redness.

Perhaps, as the oxids, the hydrates, and the carbonates are not made by acids, we might use the following typical definitions. All of the *common* official oxids are made by roasting carbonates. They are compounds of the substance spoken of with oxygen.

The common official hydrates are compounds made in a roundabout process by the union of the elements with water.

The carbonates by burning the native salts with wood or charcoal.

All other salts by causing them to react with some acid.

To return to magnesium and calcium, they form, with acids, or otherwise, the—

Carbonates,
Chlorids,
Citrates,
Oxids, and
Sulphates of Magnesium and Calcium.

Magnesium sulphate, or Epsom salt, as has been already said, is easily confounded with oxalic acid; and while the opportunity offers during your residence in the hospital, you should make yourselves familiar with the necessity of caution in the use of them.

Calcium or Lime.—There is calcium chlorid and chlorid of lime, *so called*. The latter is a commercial name, and as the two substances differ altogether, the proper names should be noted.

Calcium chlorid is in hard, white, fragmentary lumps, very deliquescent.

Chlorid of lime should be called chlorinated lime (Latin name, calx chlorata), and is a dry, white powder with the odor of chlorin.

Magnesium carbonate is known in domestic medicine as "lump" magnesia, and occurs in square or oblong pieces—from one-inch or two-inch cubes to blocks two inches by four inches.

Magnesium oxid is commonly known as powdered magnesia; also familiar as Henry's or Husband's magnesia, in one-ounce bottles.

QUESTIONS TO CHAPTER II.

How do alkalies differ from acids?

What is the source of the ammonium salts?

What is the source of the potassium salts?

What is the source of the sodium salts?

What is potassium bromid? sodium iodid? ammonium carbonate? magnesium sulphate? calcined magnesia?

CHAPTER III.

METALS.

The third class of elements consists of Zinc, Aluminum, and Iron.

Zinc and Aluminum.—The commonly used salts of these elements are:

Zinc sulphate.
Zinc chlorid.
Zinc oleate.
Zinc oxid.
Zinc stearate, and
Zinc valerianate.
Aluminum and Potassium sulphate, or common alum.
Dried or burned alum, and
Aluminum acetate (in the form of solution).

In the use of this solution it should be borne in mind that cotton and linen fabrics which have been wet with it are, in combination with the soaps used in cleansing them, decomposed and rendered rotten and worthless. Old clothing should, therefore, be used, and care taken that the solution is not unnecessarily spilled.

Iron (Ferrum).—Iron in common with all other elements forms by the action of acids a corresponding class of salts. Iron also has the quality, peculiar to some of the elements, of forming two salts with each acid, one containing a greater proportion of iron than the other.

We commonly have—

Iron carbonate.
Iron chlorid.
Iron hypophosphite.
Iron iodid.
Iron lactate.
Iron oxid.
Iron sulphate (green vitriol or copperas).
Iron subsulphate (Monsel's salt).
Iron valerianate.

It also yields a class of salts, which, from the peculiarity of form indicated by the name, are called the *scale* salts, being like scales rather than crystals. They are:

Iron and ammonium citrate.
Iron and ammonium tartrate.
Iron and potassium tartrate.
Iron and quinine citrate.
Iron and strychnine citrate.

NOTE.—It should be remembered that this latter salt contains one per cent. of strychnine,—that is, one grain in every 100 grains. *One* grain contains $\frac{1}{100}$ of that amount, or $\frac{1}{100}$ of a grain, and two grains containing $\frac{1}{50}$ of a grain of strychnine is an ordinary dose.

The fourth class includes **Lead** (plumbum) and **Silver** (argentum). They are both found as ores and often in the presence of each other. The official salts of each are few.

We have—

Lead acetate (sugar of lead).
Lead iodid (used in the form of ointment).
Solution of Lead subacetate (used in mixture with olive oil equal parts in burns); (also with an equal part of tincture of opium largely diluted with water, as lead and opium wash, for an evaporating lotion).

The silver salts are—

Silver nitrate. (There are two forms: The crystalline and stick form; the crystal is used in preparing the solution.)

Diluted or mitigated silver nitrate, which is one-third silver nitrate and two-thirds potassium nitrate. It is in stick form, is used as a caustic, but is much milder in its action than the lunar caustic.

NOTE 1.—It is not exposure to light which causes the decomposition of silver-nitrate solution, but sometimes contact with the cork and always by contact with organic dust in the air. A small bottle of it, right side up, and securely closed will not decompose in the light. While if a dark bottle *be* used, and *these* conditions not carried out, it *will* decompose. A camel's-hair brush dipped into the solution will also decompose it.

NOTE 2.—The stick silver is commonly known as caustic silver, or lunar caustic, or caustic, and inasmuch as there is another caustic, *properly* called caustic potash; and many perverse people who, rather than inquire which of the two ways is the right way, will, in selecting, select the wrong; they should *always* be spoken of as caustic silver or caustic potash or caustic soda or caustic zinc, and *never* by the word caustic alone.

The fifth class: **Mercury** (*Latin*, hydrargyrum).

The mercury salts are a very important class of compounds; because they not only, like iron, form two classes of each combination, but while one class is comparatively mild in its action and only *slowly* poisonous, the other class is very energetic in its action and rapidly poisonous in overdoses.

The pupil will do well to learn all the various names which some of the compounds have.

LATIN NAME.	ENGLISH NAME.
Hydrargyrum, ...	Mercury, Quicksilver (Hg).

A shining, silver-white, liquid metal; very heavy, thirteen times heavier than water (a one-ounce bottle of it would weigh thirteen ounces). It has neither odor nor taste. In its metallic state it is used in the following forms:

Externally, Unguentum hydrargyri (mercurial ointment).

Internally, Massa hydrargyri (mercurial mass, blue mass).

Hydrargyrum cum creta, ... Mercury with chalk; Gray powder.

NOTE.—A mass is the name given to a medicine when it has been mixed into a coherent mass preparatory to being divided into pills. In some instances, as in this one, it is kept in mass to prevent its hardening, and when blue pills are ordered, the required quantity of this blue mass is measured or weighed out and divided into pills. One-third of the mass is mercury, and therefore one-third of a pill of any weight would be metallic mercury.

The Two Chlorids.—Both of these chlorids are formed by the indirect union with chlorin and mercury in different proportions.

LATIN NAME.	ENGLISH NAME.
Hydrargyri chloridum mite, ...	Mild mercurous chlorid, Calomel, Subchlorid of mercury, Mild chlorid of mercury. Hg_2Cl_2.

It occurs as a heavy, white, amorphous powder.

Hydrargyri chloridum corrosivum, .	Corrosive mercuric chlorid, Corrosive chlorid of mercury, Corrosive sublimate, Bichlorid of mercury, Perchlorid of mercury, Bichlorid. $HgCl_2$.

Occurs as white, semitransparent crystals, or a white granular powder. It is very heavy, has no odor, but a metallic, coppery taste.

It will be well for the nurse to confine herself to the official names of Mild chlorid of mercury or Calomel, and Corrosive sublimate or Bichlorid of mercury, and when the other names are met with to never trust herself to depend upon the memory alone, but look them up; because without constantly working with these things, one can not be justly expected to remember them all accurately.

Let us consider the meaning of a number of descriptive words.

In the description of chemicals we constantly meet with powdered, granular powder, amorphous powder, and crystalline powder.

Powdered.—This means that a substance originally in large crystals like rock-salt, or in amorphous lumps like chalk, have been, by grinding and sometimes by sifting, reduced to a powdered form.

A Granular Powder.—If a solution containing a chemical be evaporated until a crust commences to form upon the surface and then set aside in a cool, still place, the substance will crystallize out. If in place of setting the solution to one side, it be stirred constantly until all the water has been evaporated, the crystals will be broken at the moment of their formation, and the result is a mass of broken crystals, or granules, or *granular* powder, as it is called.

Crystalline Powders are those substances which in crystallizing do so in small rather than in large crystals. Sometimes they are so small as to receive the name of crystalline powders.

Amorphous Powders.—While it is the nature of many substances to separate from their solutions in crystalline form, others in separating do so in a formless powder. Such powders, having no structural form, but showing under the magnifying glass as irregular soft fragments, are called amorphous, from two Greek words meaning, as has been previously stated, without form.

Artificially powdered chemicals may be felt as harsh, and heard to crunch when held between the thumb and finger close to the ear and rubbed.

Granular powders, on close inspection, may be discovered to consist of irregularly shaped pieces.

Crystalline powders, subjected to the same close inspection, will be found to consist of minute but regularly shaped crystals.

And amorphous powders are velvety to the touch; their

form, if they have any, being imperceptible to the sense of touch in breaking down.

LATIN NAME. ENGLISH NAME.

Hydrargyri iodidum flavum, ... Yellow mercurous iodid. Yellow iodid of mercury.

Old Names. — Hydrargyri iodidum viride, ... Green iodid of mercury. Hg_2I_2.

A yellow, amorphous powder, cohering into easily broken lumps, having neither odor nor taste; and on exposure to air slowly turning to a canary-green.

This was formerly called *green* iodid, because by the imperfection of the process a *greenish*-yellow powder was produced in place of the *yellow* powder produced by the perfect process used *now*.

Hydrargyri iodidum rubrum, . . . Red mercuric iodid. Red iodid of mercury. Biniodid of mercury, Deutiodid of mercury. HgI_2.

A bright, scarlet, amorphous powder. It has neither odor nor taste.

Hydrargyri oxidum flavum, ... Yellow mercuric oxid. Yellow oxid of mercury. HgO.

A bright, yellow, amorphous powder; very difficult to distinguish by the eye alone from the yellow iodid.

Hydrargyri oxidum rubrum, ... Red mercuric oxid. HgO. Red precipitate.

A hard brick-red, crystalline powder.

NOTE.—The chemic composition of these two oxids is identical. Their difference in color is due to their different form and consequent different reflective powers. A similar difference may be shown by powdering red rock-candy. It will not be red, but pink, when powdered.

The sixth class includes Arsenic, Bismuth, and Antimony.

Arsenic (*Latin*, arsenicum).—The metal itself is of mineral origin and is not used as such. The only forms in common use are the several solutions and Arsenous acid in tablet form. In the form of solution we have:

Fowler's Solution.—Official titles: Liquor potassii arsenitis, Solution of potassium arsenite.

A transparent liquid; has the odor and slight reddish color given to it by the addition of a small quantity of compound tincture of lavender, that it may not be mistaken for some harmless thing.

Donovan's Solution.—Liquor arseni et hydrargyri iodidi, Solution of arsenic and mercuric iodid.

A transparent, pale, straw-colored solution, having neither odor nor taste. It should be rejected, if by exposure to light it has become red.

These arsenical solutions contain one per cent. of arsenic. That is, *one grain of arsenic* in every 100 minims of the solution. One minim will, therefore, contain $\frac{1}{100}$ of one grain. The dose of the arsenites being about $\frac{1}{20}$ of a grain; five minims of these solutions, containing $\frac{5}{100}$ of a grain, or $\frac{1}{20}$, would be a dose.

Latin Name.	English Name.
Acidum arsenosum, ...	White arsenic, or arsenous acid.

A white powder, usually given in tablet form of $\frac{1}{20}$ of a grain each.

Bismuth (*Latin*, bismuthum).—Occurs as a mineral and is not used in metallic form. These are the salts:

Bismuth citrate.
Bismuth salicylate.
Bismuth subcarbonate.
Bismuth subnitrate.
Bismuth subiodid.
Bismuth subgallate, or dermatol.

The subnitrate and subcarbonate of bismuth are white, odorless, and tasteless powders, and are used internally.

The subiodid is a red amorphous powder used externally as an antiseptic and stimulant in dressings.

The salicylate, a white powder; the subgallate, a yellow powder,—both used in troubles of the intestines.

Antimony (*Latin*, stibium).—The only antimony salt in common use is the compound of Antimony and Potassium tartrate, or Tartar Emetic. It is not very often given by itself, but is used in compound syrup of squill and the wine of antimony. It is also one of the active ingredients in compound licorice *mixture*. The *mixture*, not the *powder*. Tartar emetic in the compound syrup of squill and compound licorice mixture is in minute doses as an expectorant. In the antimonial wine as an emetic, but not very often.

QUESTIONS TO CHAPTER III.

What causes the decomposition of silver nitrate in solution?

What forms of metallic mercury are official?

Give all the official titles of deutiodid of mercury, red mercuric oxid, calomel, green iodid of mercury, corrosive sublimate, and yellow oxid of mercury.

What particular use is there for a nurse to know these names?

Which of the names should a nurse confine herself to?

NOTE.—The nurse should *never* hesitate to ask in regard to a name whenever she is uncertain. It is not to be expected, at least not *justly* expected, that a nurse, with all the things she *must* remember, should cram her head full of obsolete terms.

What is mercurial mass used for? How much mercury is there in a blue pill of any size?

What is meant by amorphous, by granular, and by crystalline powders?

Give the common names for solution of potassium arsenite, for solution of iodid of arsenic and mercury, and the Latin name for Fowler's solution.

What is the color of Fowler's solution? What does it smell like?

What is the color of Donovan's solution?

What official preparations are mentioned as containing antimony?

CHAPTER IV.

RECONSIDERATION.

Before proceeding further, let us make a summary of the main points considered thus far:

First, we have learned that all material matter, whether solid, fluid, or gaseous, is made up of either an element or a number of elements.

Second, that an element can not be decomposed by any force at our command.

Third, that our common senses of sight, smell, taste, and touch do not make us aware of the difference between an element and a compound. Silver is an element. Alcohol is a compound of three elements. But our common senses would lead us, after a most careful examination, to pronounce both to consist—one of an unmixed solid and the other of an unmixed fluid.

Fourth, that there *are* ways by which we may decompose and separate compound substances into their component parts; that a silver coin, for instance, may be shown to consist of silver and copper, and, perchance, lead also, while *pure* silver can not be decomposed.

Fifth, that when two or more elementary substances unite chemically they undergo an entire change, — losing color and odor, often changing their gaseous to fluid and their fluid to solid forms. As in potassium chlorate we have the solid metal potassium, the green, suffocating gas, chlorin, and

the well-known fluid, water, all united into a hard, solid, transparent, odorless, bitter crystal,—differing altogether in appearance from either of its constituent elements.

Sixth, we are taught that the ultimate form of all matter is the atom, having size, although invisible and incapable of subdivision by man. This theory can not be demonstrated, except relatively. Yet, being wholly comprehensible to students of these things, it must be accepted in order that teacher may convey and pupil receive ideas.

Seventh, we learn that all compound substances are called salts; and that some of them having special qualities have been distinguished from others by being placed in a class by themselves.

You will have noticed that it is with these chemicals as with the vegetable drugs; you are accustomed to fluids, which you here learn are the *solutions* of the substances and not the substances themselves.

Let us now consider the **bromids.**

Potassium Bromid is a white, crystalline solid. It has no odor, but a salty taste.

Sodium bromid is a white, crystalline solid, odorless, and with a salty taste.

Ammonium bromid is a white, granular powder, without odor, having a salty taste.

These descriptions are sufficient.

You would be entirely unable by sight, smell, or taste to tell one from the other. That can be done only by chemic test.

NOTE.—To impress this fact on the mind of the nurse, the teacher would do well to show, by experiment, that the three substances, bromid, chlorid, and iodid of ammonium, while indistinguishable by the eye, really contain the three different elements—bromine, chlorine, and iodine.

Medical Action.—All the bromids act as hypnotics, antispasmodics, and anaphrodisiacs.

Hypnotics induce sleep, incidentally abolishing pain without any deleterious after-effects.

Antispasmodics prevent or allay irregular action or spasm of both voluntary and involuntary muscles.

Anaphrodisiacs diminish *morbid* sexual desire.

The Carbonates and Bicarbonates.

Potassium bicarbonate occurs as translucent crystals, which are inclined to deliquesce in moist air.

Sodium bicarbonate occurs as a white powder.

The taste of these two bicarbonates is called alkaline. It is more of an effect than a taste. They feel soapy or smooth in the mouth, with a sort of cooling sensation and a slightly bitter taste like soap.

Ammonium carbonate occurs in cut cubes, a little smaller than lumps of sugar. When fresh they are translucent, but become white. It has the odor of ammonia gas.

Deliquescence, or melting away, is a term used to express the property which some chemicals have of absorbing water from the air, gradually becoming more and more damp until they finally melt. Some of the potassium salts deliquesce.

Efflorescence, blossoming forth, expresses the property some chemicals have of giving up the water contained in them, swelling during the act, as a bud swells before bursting into blossom. Some of the sodium salts effloresce.

Translucent.—A substance is said to be translucent when it will admit the light, but we can not see through it—like ground glass.

Medical Action.—The carbonates of potassium are alkaline in their medicinal action. They act, first, as antacids;

second, if given before meals, they stimulate the flow of acid gastric juice. Ammonium carbonate is a vascular stimulant.

Vascular Stimulant.—Medicines which dilate the peripheral or outlying blood-vessels and stimulate peripheral circulation. They also stimulate the heart's action.

Iodids.

Potassium iodid occurs in white crystalline form; odorless, with a bitterish alkaline taste.

Sodium Iodid.—A white granular powder, odorless, with a salty, bitterish alkaline taste.

Ammonium Iodid.—A white granular powder, odorless, salty, bitterish alkaline taste.

The iodids are alteratives.

Alteratives alter the course of morbid conditions, modify the nutritive processes, stimulate secretion and absorption and the elimination of morbid deposits, and produce a beneficial change generally.

The Magnesium Salts.

Magnesium carbonate occurs in square lumps, appearing like chalk, but whiter and lighter. It is easily broken in the fingers and absorbs a large amount of water; has neither odor nor taste. It is chiefly used as an antacid and for what is familiarly known as "heartburn."

Magnesium citrate is used in two forms: The granular occurs in white, spongy granules, which effervesce on being thrown into water. It is a mild purgative in doses of a teaspoonful to a tablespoonful.

Solution of magnesium citrate is, as its name implies, a solution of the substance in water, sweetened with lemon syrup. It is usually placed in twelve-ounce bottles, which constitutes one purgative dose for an adult.

Approximately, two tablespoonfuls of the granular powder equal a bottle of the latter. The solution is a little pleasanter to take, because it is slightly acid.

Magnesium oxid, or calcined magnesia, occurs as a fine, light, white, dusty powder; no odor; no taste. It is used as a cathartic, and the heavy variety, if kept secure from the air, is more active than the light.

Magnesium sulphate occurs in small colorless crystals. They effloresce and become white. It has no odor but a bitter taste. It is purgative. It is commonly called Epsom salts, and *sometimes*, in solution with sulphuric acid, *super*-sulphate of magnesia.

The nurse should, by sight, familiarize herself with the slight differences in appearance between magnesium sulphate, zinc sulphate, and oxalic acid.

Effervescence is the boiling which occurs when certain chemicals are brought together and mixed with water. They decompose and gases are formed, which, escaping as bubbles, cause what is called effervescence. A Seidlitz powder effervesces. Champagne, soda water, beer,—these effervesce. When the cork is removed from the bottle the pressure is removed and the gas escapes with effervescence.

Zinc Chlorid.—This is used as a deodorizer and disinfectant in the form of solution. The salt itself comes in white fragments, very hard and exceedingly deliquescent. It is escharotic.

Formula: As a disinfectant it is used in the proportion of four fluidounces of the official solution to one gallon of water with two drams of hydrochloric acid.

This is left standing in open vessels. It is particularly useful in deodorizing and disinfecting urinals and bedpans.

Liquor Zinci et Ferri Compositus:

℞. Ferrous sulphate, ... 16 ozs.
Zinc sulphate, ... 16 ozs.
Naphthol, ... 20 grs.
Oil of thyme, ... 60 ♏
Hydrochloric acid, ... 120 ♏.
Water to make five pints.

This compound has an odor and for that reason is more popular; few people being able to believe that an odorless deodorizer will deodorize.

Zinc Oleate and Zinc Oxid.—These are both fine white powders. They are used externally as absorbents and astringents. The oxid is very much used in the form of ointment.

Definition.—Escharotics destroy the tissues to which they are applied.

Definition.—Antiseptics prevent putrefaction, either by destroying the micro-organisms causing it or by preventing their growth.

Tincture of the Chlorid of Iron.—A bright, brownish liquid having a slight ethereal odor and an astringent, styptic, acid taste.

Syrup of the Iodid of Iron.—A solution of iodid of iron in syrup. A transparent, pale-green liquid, with a sweet, inky taste. When brown it should be rejected.

Sulphate of iron occurs in green crystals, efflorescing and turning white. Chiefly used in the form of solution as a disinfectant in the proportion of four ounces to a gallon of water. *It will stain clothing.*

Persulphate of Iron Solution, or Monsel's Solution.—Either as a yellowish-white powder or a dark reddish-brown liquid, both having an acid, styptic taste. It is used

as a styptic to arrest hemorrhage, which it does by coagulating the blood.

Iron and Quinine Citrate. Iron and Strychnine Citrate. Iron Citrate.—These salts and others of their kind are seldom seen by the nurse, some of them being deliquescent and usually presented in the form of solution. They are all in thin, transparent scales, irregular in outline and size, some being greenish-yellow and some garnet-red. All of the salts of iron are hematics, and those containing quinine and strychnine are general tonics also. They all have a constipating effect upon the bowels.

Definition.—Hematics, or blood tonics, restore the quality of the blood, exerting a direct influence on its composition.

Tonics increase the vigor and tone of the system by improving the appetite, favoring digestion and assimilation, and adding strength to the circulatory system.

Silver nitrate has already been sufficiently considered. In removing the stains from the skin the following solution, if thoroughly rubbed into the spots, is recommended:

℞. Iodin, ... 3 grs.
Potassium cyanid, ... ℥j
Distilled water, ... f℥j.

Poison.—This spoils when kept long. It is easily prepared and should be fresh when used, or, at least, colorless, color indicating decomposition.

Bichlorid of mercury is given internally in the form of tablets of $\frac{1}{32}$ of a grain as an alterative. It is used especially in syphilitic disorders. In solution as an antiseptic wash it is very largely used.

Perhaps the only safe way for a nurse to prepare such solutions, in private practice, is to use the tablets which come

for the purpose. Directions are always printed upon the bottle, telling just the number of tablets required to make a pint of solution of any required strength.

Calomel is used as a cathartic and cholagogue. The dose is from $\frac{1}{8}$ to 10 grains.

Definition.—Cholagogues remove bile from the duodenum.

The **red** and the **yellow iodids of mercury** are used as alteratives in syphilitic disorders. Their respective doses differ. The dose of the red iodid is $\frac{1}{16}$ of a grain; that of the yellow iodid is from $\frac{1}{4}$ to one grain.

The antidotes to mercury and arsenic are given here. The remaining poisons will be given in a separate chapter.

Mercuric chlorid when swallowed produces burning heat in the throat, excruciating pain in the stomach and bowels, thirst, anxiety, nausea, diarrhea, etc.

As an antidote, the whites of six or more eggs are first beaten with water and swallowed. They form with the mercury an insoluble compound, which must be removed from the stomach by an emetic before it has a chance to digest, which it will do after a while.

Arsenic, whether used internally or externally, in overdoses, or by prolonged action, acts with great energy and sometimes destroys life in a short time.

Free vomiting should be induced by the finger or a feather or by an emetic.

The antidote is a chemic one. Every nurse should know its name, to be able to ask for it when needed. It is the freshly prepared hydrated oxid of iron.

It is made by adding water of ammonia or calcined magnesia to a solution of tersulphate of iron. An iron-rust-colored precipitate is formed, and is given in tablespoonful

doses, as much as the patient will swallow. It forms with the arsenic an insoluble compound and acts as an emetic.

QUESTIONS TO CHAPTER IV.

What is an element?
What is an atom?
What are the medicinal effects of the bromids?
Define a hypnotic, an antispasmodic.
What is meant by deliquescence?
Name the class of salts which act as antacids.
What is meant by efflorescence?
What is the general medicinal effect of the iodids?
Name the two magnesium salts used as purgatives.
How much granular citrate of magnesium is equal to a twelve-ounce bottle of the fluid?
What poisonous substances closely resemble Epsom salt in appearance?
What is the chemic name of Epsom salt?
How is solution of zinc chlorid prepared for disinfecting purposes?
What should be the color of syrup of iodid of iron?
How much strychnine is present in ten grains of citrate of iron, quinine, and strychnine?
If a four-ounce prescription contains four grams of it, would a teaspoonful be a safe dose?
If a four-ounce bottle contains sixty-four grains of it, how much strychnine in each teaspoonful?
Give the chemic names of the different kinds of caustics mentioned in the text.
What is the common name for solution of persulphate of iron?
What is the antidote for mercurial poisoning?
Dose of red iodid of mercury, of calomel, of corrosive sublimate, of arsenic, of biniodid of mercury?

CHAPTER V.

ORGANIC CHEMISTRY.

Organic chemistry treats of those substances found naturally within the bodies of animal or vegetable organisms.

There are quite a number of substances used as medicines, which are derived from the destructive distillation of wood, coal, and coal oil.

By distillation we take advantage of that natural phenomenon called vaporization, to collect the vapors. All substances are capable of vaporization if they be heated to a sufficiently high degree.

Coal has its origin in wood, so has petroleum. And when distilled, the resulting products show quite plainly their similarity in origin.

NOTE.—When wood or coal is burned we have ashes left. Many things, however, go up the chimney,—charcoal, tar, turpentine, acids of various kinds, a whole series of gases and water. If the burning be perfect, very little evidence of all this is to be seen. But if the chimney does not draw well, then we perceive by smell and sight, in what we call smoke, that the products of combustion are quite palpable.

If, in place of burning these substances, we distill them, we may collect all of the gases, fluids, and vaporized solids. They are very numerous, and by treatment with all kinds of chemicals, and under various extraordinary conditions of cold, heat, vacuity, and high pressure, there is formed a vast variety of compounds, useful in all the arts and sciences, that of medicine among others. And as the coal or wood under this treatment is destroyed, we speak of the process as one of destructive distillation. We

speak of the *substances* so obtained, in a general way, as being products of the destructive distillation of wood or coal or coal oil.

Cotton is not a product of the distillation of wood, but it is usually placed at the head of this section. It is the same substance which makes up the framework of vegetable or woody tissue, and it is the hair which grows on the seed of the cotton plant. Its Latin name is Gossypium, and it is official as *Gossypium purificatum* (purified cotton or absorbent cotton). This is prepared by washing ordinary cotton with potash or soda water to clean off the oil and dust always present. It is then washed in acidulated water, and finally rinsed in pure water and dried.

It differs from ordinary cotton as follows:

Ordinary cotton is yellowish-white and soiled, and being oily, dirt sticks to it.

Absorbent cotton is pure white and cleaner. Being free from oil it *remains* clean.

Ordinary cotton tastes and smells oily. Absorbent cotton is odorless and tasteless.

Ordinary cotton wets with difficulty and floats upon the surface when thrown into water. Absorbent cotton wets easily and sinks beneath the surface at once when thrown into water.

Absorbent cotton should neither turn blue litmus red, nor red litmus blue, showing the absence of acids, and potash or soda.

NOTE.—*Litmus.*—This is a coloring matter obtained from a variety of rock moss by chemic treatment. A tincture is made from it, and pure white paper being dipped into it yields blue litmus paper. The blue paper dipped into a *very dilute* solution of sulphuric acid yields red litmus paper. This substance is very useful as an indicator of the presence of

acids and alkalies; the blue being turned red by all acids, even in minute quantities; the red being turned blue by the presence of alkalies, even in minute quantities. And when blue is *not* turned red, or red turned blue, the solution under test is called *neutral*.

Pyroxylinum (Soluble Gun-cotton).—Gun-cotton is not used as such in medicine, but it is of considerable importance in the form of collodion.

When cotton is treated with a mixture of nitric and sulphuric acids its *form* remains unchanged, but it is, nevertheless, changed chemically, and at the end of the operation it is cotton only in appearance.

It is brittle instead of tenacious. When thrown into water its fibers instead of remaining interlaced break more or less and fall to powder.

Cotton, when lit with a match, burns slowly, as light wood shavings burn. Gun-cotton takes fire and burns instantly and with explosive force.

Ordinary cotton will not dissolve in alcohol or ether, nor in a mixture of these. Gun-cotton completely dissolves in a mixture of ether and alcohol, and when so dissolved, as has been already told, forms collodion.

Oxalic acid has already been given sufficient consideration under the acids. It is an organic derivative and properly belongs here.

NOTE.—There are quite a number of substances differing widely in their physiologic action but closely resembling each other in their appearance to the eye.

Bodies having these points of agreement in form, while differing in properties, are called *isomorphous*, from two Greek words, ἴσος and μορφή meaning "equal" and "form."

Oxalic acid, sulphate of zinc, and Epsom salt have these points of

resemblance to the *ordinary observer*. Placed side by side to people unfamiliar with them one might easily be mistaken for the other, and many cases of fatal poisoning are recorded as having resulted from such mistakes.

A quantity of oxalic acid, equal to a dose of Epsom salt, would undoubtedly prove fatal anywhere except in a hospital, and an equal dose of zinc sulphate, if not fatal, would cause long and serious illness. The nurse should thoroughly familiarize herself with these facts and never administer them without thinking of it.

Acetic acid also belongs in this section, being, as the pupil will remember, obtained by the distillation of wood at a low temperature.

Creosotum (Creosote).—This is one of the compounds obtained by distilling wood. Tar is one of the products of the distillation of wood, and it contains many other substances, among them, creosote.

Our official creosote is obtained by distilling beechwood tar.

NOTE.—It has doubtless been a source of wonder how so many things can be obtained by distillation of the same thing. Every substance at a certain temperature becomes converted into vapor. When a mixture of several substances is heated until vapor begins to pass over into the receiving chamber, the temperature is held there for a while until all of that particular vapor has passed. Then the temperature is elevated a little and another sort of vapor passes over, and so on until nothing more will pass, or until we have succeeded in obtaining the substance sought for. This is properly called fractional distillation.

This is what is meant when we say a substance—like, for instance, acetic acid—is obtained by distilling wood at a low heat. The acetic acid passes into the receiving chamber, but all the *other* things remain in the wood.

There is a great difference between wood creosote and coal-tar creosote, the latter on account of its cheapness, or through ignorance, being used

in place of wood creosote or to adulterate it with. The following are the points of difference, and they should be learned while the nurse is in the hospital, where both are to be seen:

Wood creosote has an unmistakable odor, which once realized can not be forgotten. Coal-tar creosote has an entirely different odor.

Wood creosote when mixed with collodion forms a clear liquid mixture. Coal creosote, mixed with collodion, forms a jelly.

Wood creosote does not corrode the skin. Coal creosote corrodes the skin. Coal-tar creosote is a very indefinite substance, being anything from pure to the most impure carbolic acid.

Acidum Carbolicum (Carbolic Acid; Phenol).—This important product is one of the substances obtained by the fractional distillation of coal tar.

For internal use it should be entirely colorless, with its own peculiar odor, which is not exactly tarry, but peculiar and easily remembered after once experienced. It enters the market in crystalline form, which, for convenience in measuring, is liquefied by heat, and rendered permanently fluid by the addition of five per cent. of water or glycerin. If glycerin be added, the acid will mix with water in all proportions. Otherwise, it will not dissolve in less than twenty parts of water.

The pharmacopeia recognizes an impure acid also, which is a reddish-brown to black oily fluid, having the characteristic odor of tar, and which is very efficient as a disinfectant.

In preparing solutions of carbolic acid, care should be taken to shake the solution until all the globules of acid are dissolved, otherwise they will settle to the bottom of

the bottle, and by coming into contact with a wound in the concentrated state cause harmful results.

Carbolic acid quickly corrodes the skin, and many things have been suggested to neutralize its effects, such as sodium carbonate, sodium salicylate, oils, etc.; but a consideration of the fact that carbolic acid is *not* an acid, and therefore not neutralized in its effects by alkalies as true acids are, led the author to experiment with it. His results were *nil.* But a ward tender having spilled some strong acid over both hands and arms, on the spur of the moment, washed them freely with the only thing at hand, which was a pint lampful of alcohol. The author thinking it worth trying, tried it with success, and since that time has repeatedly used it, and always with perfect result. He recommends, therefore, with entire confidence that the spots be immediately and thoroughly washed with alcohol. If it is the hands that have been ex-exposed, wash well the surfaces between the fingers and let all creases in the skin be reached. Then if this has been *thoroughly* and *slowly* done, water will remove all traces.

Following are two lists of substances derived from coal tar: One, the first one, is the official list. The other is unofficial, being either drugs of well-established value, but barred out of our pharmacopeia because patented, or else drugs the established value of which has not yet been recognized.

The most of these drugs are made by exceedingly complicated processes, impossible of comprehension by any one not advanced in the science of chemistry, fully as difficult to

explain as they are to comprehend, and therefore one general definition will be given for all.

To the question, What is beta-naphthol? an answer similar to this may be given, which will also serve for all the rest:

It is one of the products derived from coal tar by distillation and subsequent chemic treatment. It is given in doses of from one to five grains as an intestinal antiseptic.

Official List.

Naphthol or Beta-naphthol.—Pale, buff-colored, shining crystalline powder, or sometimes powdered fine. Used as an intestinal antiseptic. Dose, 1 to 5 grains.

Acetanilid or Phenylacetamid or Antifebrin.—White, shining crystalline scales or powder, the scales resembling isinglass. Use as an antipyretic in doses of from 1 to 5 grains (0.065 to 0.325 gm.).

Resorcin.—Colorless or pinkish needle-shaped crystals. Antiseptic in doses of from 1 to 5 grains.

Salicylic Acid.—White or creamy-white powder, turning pink on long exposure; *should* be white. Used as an antiseptic. Dose, 1 to 5 grains.

Salol.—White crystalline powder; internal antiseptic. Dose, 1 to 5 grains.

Unofficial List.

Antipyrin.—White powder, antipyretic. Dose, 1 to 5 grains.

Benzo-beta-naphthol.—Pinkish-white powder or crystalline powder. Intestinal antiseptic. Dose, 0.065 to 0.325 gm.

Guaiacol.—Colorless fluid with an odor resembling creosote. Kolyseptic. Dose, 1 to 5 minims.

Kolyseptics are those drugs which prevent the deleterious action of the products of disease germs, by decomposing them and rendering them harmless.

Phenacetin.—A white or crystalline powder. Used as an analgesic in doses of from 1 to 10 grains.

Analgesics are substances which relieve pain by their effect upon the sensory nerve-centers.

Salophen.—White crystalline powder. Analgesic. Dose, 5 to 15 grains.

Sulfonal.—White crystalline powder. Analgesic. Dose, 1 to 15 grains.

Ichthyol is placed here because there is no other place for it. It is a dark, peculiar-smelling fluid, its odor resembling or suggestive of burning sulphur matches as much as anything, and is obtained by distilling the fossilized remains of fishes and treating the product with sulphur and ammonia. It is used internally and externally for almost everything, with more or less beneficial results, acting as an alterative. It is largely used in skin diseases. Dose, 1 to 5 minims.

QUESTIONS TO CHAPTER V.

What is meant by organic chemistry?
What is meant by destructive distillation?
How is absorbent cotton prepared?
What are the plain signs of its purity?
Tell how it differs from ordinary cotton.
What is the official name of gun-cotton, and what is it used for?
What is litmus paper made from?
What is meant by isomorphous?
Name three substances which to the ordinary observer are isomorphous.
How would you know a sample of creosote to be wood and not coal-tar creosote?
In what proportion is carbolic acid soluble in water?
What substance may be added to it, if it is desirable to increase its solubility?
What is best to remove the strong acid from the hands?
What are salol, guaiacol, phenacetin?

CHAPTER VI.

PRODUCTS OF FERMENTATION.

Starch, under the influence of moisture and heat, is converted first into sugar and then into alcohol.

Cane-sugar, under the influence of a fermenting substance and heat, is also converted into alcohol.

So it happens, that when starchy grains like corn, rye, barley, etc., are allowed to soak in water in a warm room germination or sprouting commences, and that point marks the conversion of starch into sugar.

Then if yeast be added we start fermentation and the production of an alcoholic fluid, which, when separated from the impurities by distillation, is known as whiskey, and consists of between fifty and sixty per cent. of alcohol.

At the end of the germination or sprouting of the grain, spoken of above, if the process is stopped and the sprouting grain is dried at a low heat the product is malt.

When this malt is percolated with water the product constitutes liquid malt.

If this liquid malt is very carefully evaporated at a low temperature, we have the thick, molasses-like appearing fluid, known as extract of malt or maltine. This maltine is rich in a substance called diastase, which is capable of digesting starch. Its value as a digestant depends upon the presence of this diastase, and as it is easily destroyed by a few degrees too

much of heat some care should be taken to use the product of reliable makers.

Similarly to the fermentation of grains, when grape-juice or other fruit juices containing sugar are exposed to the action of a ferment and a temperature of 70° F. or 75° F., the sugar is decomposed and alcohol is produced. The product is wine, and it varies in the amount of alcohol present, according to the quantity of sugar present in the beginning of the process.

Whiskey.—When the alcoholic fluid obtained from the fermentation of grain is subjected to distillation, there passes over into the receiving chamber a colorless fluid containing more than fifty per cent. of alcohol. This is whiskey, and as usually seen is of a clear brown color, which it acquires from the casks in which it is kept, or is added to it—burned sugar or caramel being used for this purpose.

Brandy.—When the alcoholic fluid from the fermentation of grape-juice is subjected to distillation the colorless fluid passing into the receiving chamber is called brandy. It contains about fifty per cent. of alcohol. This, too, is colored, unless the cask affords coloring-matter enough.

The difference between the flavor of whiskey and brandy is due to other fermentation products, peculiar in each instance to the grain or fruit which is fermented.

As products originating in these two or derived from them, we have what are called the ethyl and the amyl compounds.

Ethyl is a gas, and **amyl** a highly volatile fluid. Neither of them is ever used in medicine, but certain fluid salts derived from them are very familiar to you.

They are members of a whole series of compounds, which result from the decomposition of vegetable substances; and

some of them are always being formed wherever decomposition of vegetable matter is going on, be it natural or artificial.

First we have ethyl hydrate or alcohol; deodorized alcohol, absolute alcohol, and diluted alcohol are different forms of the same thing.

Alcohol is obtained by the fractional distillation of whiskey at a temperature which vaporizes the alcohol and leaves the water behind.

The strongest alcohol obtainable by this process is about eighty-seven per cent., and this by further treatment is converted to ordinary alcohol of commerce, called ninety-five per cent.

Deodorized Alcohol.—All alcohols, but more especially that made from potato-starch, contain fusel oil, or amylic alcohol. This is poisonous, and to its presence in minute quantities the odor of alcohol is due.

When alcohol is mixed thoroughly with potassium permanganate and distilled, this fusel oil is removed and we have an alcohol without an odor.

Absolute Alcohol.—This, as its name implies, is an alcohol from which every trace of water has been removed. Freshly burned lime absorbs water with great avidity, so also does calcium chlorid. Alcohol is first percolated through freshly burned lime, which allows the alcohol to pass through but absorbs almost all of the water. It is allowed to flow into a distilling apparatus, which has some fragments of calcium chlorid at the bottom. The still is now entirely exhausted by an air-pump of all air and the moisture which always accompanies it. Heat is now applied as carefully as possible. The absolute alcohol distills over, and any minute portion of

water which may have been left is retained by the calcium chlorid at the bottom. This alcohol is 100 per cent., but on exposure very quickly absorbs moisture from the air, and soon after being left open will be found, if examined, to be ninety-five per cent. more or less. It should, therefore, be kept in small, well-filled, and securely stoppered bottles.

Diluted Alcohol.—This is made by mixing equal measures of alcohol and water.

Ethyl Oxid, or Ether.—When alcohol is mixed with a small proportion of sulphuric acid and heated, one of the products of the decomposition is ether, which is separated by distillation.

Ether for anesthetic use must be pure, and as it is not a part of a nurse's duties to test the purity of her medicines she should be aware that it is necessary to know of a reliable maker. There are several such, but there is only one who has been in the market long enough to become widely and favorably known to physicians. That is Squibb,—Squibb's Ether, then, is the kind the nurse should ask for, because it is to be found everywhere.

NOTE.—The tests are simple, and should be shown by the teacher according to the pharmacopeia.

Ethyl Chlorid. — By the treatment of alcohol with hydrochloric acid one of the products is ethyl chlorid. This substance is highly volatile, boiling at 50° F., and is usually found in the market in sealed glass-tubes. These tubes have a minute needle hole bored through one end, through which when uncovered and held in the hand the boiling fluid is ejected in a fine stream. It should be securely covered when not in use and kept in a cool place.

Ethyl Nitrite (Spiritus Ætheris Nitrosi, Sweet Spirit of Nitre, Spirit of Nitrous Ether).—This product is formed when nitrous acid is caused to react with alcohol. It should be colorless or at most a very light straw color. It should not be acid to litmus paper.

Amyl Nitrite.—When fusel oil or amylic alcohol is caused to react with nitrous acid, amyl nitrite is formed.

It is a pale-yellow fluid, very volatile, and is best kept ready for instant use, which is always required of it, in sealed glass-pearls, which are easily crushed in a napkin for inhalation.

Chloroform.—When alcohol is treated with chlorinated lime one of the products of the decomposition is chloroform. It should be kept in dark, amber-colored bottles in a cool place.

Squibb's chloroform should be used because, outside of the large cities, like ether, no other reliable make is certain to be found.

Chloral (or more properly Chloral Hydrate).—This colorless, crystalline solid, having its own peculiar odor, is the substance which is formed when alcohol is exposed for a long time to the action of chlorin gas. Chloral is a fluid, chloral hydrate is a crystalline solid, but chloral is the official and commonly used name.

Iodoform.—This substance needs no description. It comes in two forms. The fine granular powder is the most suitable for dusting into wounds, as it does not cohere into the little balls as the powder does. The other form is that of fine powder. It is made by exposing alcohol to the action of iodin in the presence of potassium carbonate.

Iodoform Gauze.—There are many ways of preparing gauze

The following may be taken as typical: Bleached gauze is first soaked in a solution of bichlorid of mercury 1 : 1000 and sterilized. A mixture of iodoform powder with glycerin is prepared so that one fluidounce of the finished product shall contain one-half ounce Troy of iodoform. Sufficient water to saturate twenty yards of gauze (which must be ascertained by experiment, as gauzes differ) is sterilized and placed in a suitable jar. Two ounces of the glycerin and iodoform mixture are added and mixed. The gauze is now placed in the jar (the hands having been sterilized) and thoroughly kneaded until all the fluid with all the iodoform has been taken up by the gauze and evenly distributed through it. To do this, the jar must be several times larger than sufficient to hold the material. This method has proved very satisfactory in a great number of cases. The glycerin renders the iodoform miscible with water and retains the moisture in the gauze, preventing it from sticking to the wound to which it is applied.

Paraldehyd.—When weak alcohol is exposed to the action of the air a substance called aldehyd is formed. When aldehyd is treated with sulphurous acid *par*-aldehyd is formed. It has a peculiar odor. It is a hypnotic, but is little used owing to the disagreeable odor and the disturbance to digestion caused by it with its attendant troubles.

Gin. Rum.—These two liquors are not official.

Gin is distilled from fermented grain, just as whiskey is, but previous to the distillation fresh juniper berries are added which impart to it its peculiar, distinguishing odor.

Rum is the alcoholic fluid obtained by distilling fermented molasses.

QUESTIONS TO CHAPTER VI.

What two familiar substances are the sources of alcohol?
What is the name descriptive of the change?
What is alcohol obtained from?
Tell briefly how its odor is removed and how it is rendered absolute.
What is the real strength of the so-called 95 per cent. alcohol?
What is the strength of absolute alcohol?
Why are any precautions necessary in keeping absolute alcohol?
What is ether made from?
Why is one special make to be preferred?
Whose make is it?
What is the official title of sweet spirit of nitre?
What is meant by official?
Why is granular iodoform sometimes preferred to powdered iodoform?
How is iodoform gauze made?
What is the difference between gin and whiskey?

CHAPTER VII.

VOLATILE AND FIXED OILS.

Volatile Oils are sometimes called distilled oils, in allusion to the manner in which they are separated from the plants containing them; sometimes essential oils, from the circumstance that they possess in a concentrated state the *properties* of the plants from which they are obtained.

Such familiar substances as cloves, nutmegs, cinnamon, cardamon, orange peel, lemon peel, etc., owe their peculiar odors to the volatile oils contained in them.

Some substances, such as orange and lemon peel, being soft and easily crushed and containing little or no coloring-matter and a large proportion of oil, are subjected to hand pressure and the oil is pressed out.

Most of these drugs, however, being woody in their structure, will not yield to such treatment, and, moreover, the oil is present in such small proportion that although we might crush the wood it would not give up the oil. These drugs are, therefore, placed in a still with water and subjected to distillation, or else placed on perforated shelves in a specially constructed still and steam passed through them. The latter process is the quicker. By either process the oil and a portion of the water are carried into the receiving chamber where the oil, being lighter than the water and floating upon its surface, is easily separated.

NOTE.—This can easily be shown with a couple of glass flasks containing cinnamon bark and water, and will impress the process indelibly upon the mind of the nurse.

These volatile oils are very little used in their original form. All the essences are alcoholic solutions of them. The aromatic waters also are made from them. They are used in flavoring the elixirs and some of the tinctures, and some are used externally in the form of liniments.

A complete list of them will be found in the Appendix.

Fixed Oils and Fats.—These oils are called fixed oils, because they are not volatile but permanent or fixed when exposed to the air. The fixed oils and fats are derived from both the vegetable and animal kingdoms. Commonly speaking, the oils are fluid, the fats solid. They are insoluble in water, and with one exception insoluble in alcohol; (castor oil being the exception).

Fixed oils and fats are well-defined salts, and capable of being decomposed by contact with other salts. They are not as simply and as easily decomposed, however, as some of those hitherto studied, but require extraordinary conditions of exposure and heat.

It is by the decomposition of these salts that glycerin and soap are formed.

As the official list is short they are given here:

LATIN NAME.	ENGLISH NAME.
Oleum amygdalæ expressum, . . .	Expressed oil of almonds.
Oleum gossypii seminis, ...	Oil of cotton-seed.
Oleum olivæ, ...	Olive oil, sweet oil.

These two oils, cotton-seed and olive, are used interchangeably, one in place of the other. Chemically they are the same

thing, but they differ somewhat in point of flavor. Strictly speaking, there is no more reason for substituting one for the other than there is in any other similar instance, or rather there is just as *little* reason as there ever is. As a matter of principle it is wrong.

LATIN NAME.	ENGLISH NAME.
Oleum lini,	Linseed or flaxseed oil.
Oleum ricini,	Castor oil.
Oleum tiglii,	Croton oil (*Poison!*).
Oleum theobromatis,	Cocoa butter.

This oil is solid below the body temperature of 99° F., and as it quickly melts above that temperature it is a convenient vehicle for the formation of suppositories.

Adeps,	Lard.
Sevum,	Suet.

NOTE.—The vegetable oils are obtained by subjecting the seeds containing them to powerful pressure.

To understand how soaps and glycerin are obtained from oils and fats, it is necessary to know that oils and fats, and soaps and glycerin are all definite salts. There are in this connection two acids—oleic acid and stearic acid, both of which are official.

There is, also, a substance known as glyceryl. As a rule, the fluid fats are oleates of glyceryl; the solid fats, stearates of glyceryl; while glycerin is hydrate of glyceryl.

When an oil, or a fat of any kind, is heated with water and potash or soda decomposition occurs and soap and glycerin are formed.

Hard soaps are made from soda; castile soap being made from soda and olive oil.

Soft soaps are made from potash; the official soft soap being made from linseed oil and potash.

The German soft soap, which is a better product, is made from fish oil and potash.

The glycerin from this process is impure, and use is found for it in other and cruder arts than that of medicine.

For medicinal use, pure oil is exposed to the decomposing power of steam under high pressure. One of the products of the decomposition is pure glycerin.

NOTE.—*Soaps.*—Soaps are too well known to need much description. Their colors vary with the fats and oils from which they are made. They have a peculiar odor which is usually covered by a perfume. They are heavier than water and soluble in it, the potash soaps being more rapidly dissolved than the soda soaps. Acids decompose them and destroy their cleansing qualities.

The metallic salts all decompose them, and the so-called hard waters owe their hardness to the presence of mineral salts which decompose the soap. For this reason the mercury salts lose their antiseptic powers when mixed with soap, for they become insoluble and therefore inactive.

(The conditions under which they may be mixed are given below.)

The efficiency of a soap as a detergent or cleansing substance lies in its power of rendering greasy substances soluble in water and therefore capable of being washed away, along with the dirt which is imbedded in it.

The ethereal solution of soap being a very desirable article in antiseptic surgery and not official,—the formula for its preparation devised by the author and which has long been in satisfactory use, is given.

Tincture of green soap (U. S. P. 1880), . . } equal parts.
Ether, ... }

The superior efficacy of this solution of soap lies in the fact of the penetrating power of the ether, which carries the soap into more intimate contact with the skin, penetrating the interstices of it, dissolving out the fat in which the dirt lies imbedded, and washing it away. Those same beds

of fat with the dirt in them, being by superficial washing, pressed in more firmly than before.

The following concerning bichlorid of mercury soap is taken from the price list of Schieffelin & Co., of New York, and speaks for itself: "Solution of corrosive sublimate is colorless. Solution of pure white soap is also colorless. If pure white soap *is especially made free from alkali* it is compatible with corrosive sublimate and should be white; but if alkaki is present the soap soon becomes green, and therefore most of the corrosive sublimate soaps in the market become green (or else they are colored to disguise the fact). A test for an *efficient* corrosive sublimate soap may be made by exposing a thin slice of it to the decomposing power of strong sunlight, when it will turn green."

And the author would recommend any one wishing to use corrosive sublimate soap to use that of Schieffelin & Co. It is like ether and some other things, in the respect that it requires more skill in its preparation than is usually bestowed upon it, and the product of a reliable maker should be used.

QUESTIONS TO CHAPTER VII.

Where are the volatile oils obtained from?
What are they used for mostly?
By what two processes are volatile and fixed oils obtained?
Name some common substance containing a volatile oil.
What class of preparations are made by dissolving volatile oils in alcohol?
Where does glycerin exist in its native combination?
How is soap made? What else is made at the same time?
What is used to prepare the ethereal solution of soap?
How would you prove in a simple way the presence of bichlorid of mercury in soap?
What color should bichlorid of mercury soap be?

CHAPTER VIII.

GLUCOSIDES AND ALKALOIDS.

The glucosides are placed with the alkaloids because, from similarity in their appearance and names they might be mistaken one for the other.

There are only four official ones. They are the active principles of the drugs in which they are found, but are not as definite in their chemic properties as the alkaloids are.

Elaterin, from the juice of the s pirting cucumber. Cathartic.
Glycyrrhizin, from licorice root. For sweetening bitter things.
Salicin, from the willow bark. Tonic, alterative.
Santonin, from Levant wormseed. Vermicide.

NOTE.—It will be noticed that the words end with the syllable *in*.

Alkaloids.—The word alkaloid is a compound word, meaning like an alkali, in allusion to the fact that like alkalies they form salts with acids.

They are found in both the animal and vegetable kingdoms. But as yet, those having established therapeutic value are derived from the *vegetable* kingdom. They are the so-called active principles of drugs, although some active principles are not alkaloids. Sometimes only one alkaloid is found in a drug, but very often *more* than one occur together in the same drug. They are all energetic in their action upon the animal organism, and many of them are violent poisons.

As a class of substances they may be distinguished from

other chemicals, glucosides in particular, when their names are seen in print, by their terminal syllable consisting of the letters *ine*.

There are a great many alkaloids which are never used—at least, not in general practice. The following embraces all that are usually found in a well-appointed hospital:

By the latest list at the author's command, nineteen distinct alkaloids of opium have been discovered. Only two of them are commonly used.

Morphine.—The sulphate, hydrochlorate, and acetate. The acetate is an unstable compound. Narcotics. Dose, ⅛ of a grain.

Codeine.—The sulphate and the phosphate. Sedative. Dose, ¼ to one grain.

NOTE 1.—It is the salts of the alkaloids which are used. The alkaloids uncombined are insoluble in water. The salts are soluble.

NOTE 2.—These alkaloids should be shown the nurse, descriptions being useless, as to the eye of the untrained observer they are all alike. It is desirable from the fact that in that state they are very dangerous, and to impress upon their minds the fact that the fluids which they mostly use are *solutions* only—*not* the alkaloids in substance.

Apomorphine is not a natural but an artificial alkaloid, made by boiling together, under pressure in sealed tubes, morphine and hydrochloric acid. This yields a substance differing from morphine entirely in its physiologic action; being, instead of a narcotic, a quick and powerfully acting emetic.

The alkaloids of cinchona bark:

Quinine.—The bisulphate, sulphate, hydrochlorate, hydrobromate, and valerianate. Dose, ½ to 5 grains.

Cinchonidine.—The sulphate and salicylate. Dose, ½ to 5 grains.

Alkaloid of Nux Vomica.—Strychnine, sulphate, nitrate. Tonic, $\frac{1}{60}$ of a grain.

Alkaloids from Tea or Coffee.—Caffeine, citrated (being a mixture of equal parts of caffeine and citric acid). Stimulant. Dose, 1 to 10 grains.

Those above are commonly used. Those following are

very important also, but they are seldom left with the patient, being administered under the direct supervision of either the physician or the nurse.

From Belladonna.—Atropine sulphate. Used as a mydriatic. Dose, $\frac{1}{50}$ of a grain.

From Aconite.—Aconitine sulphate. Sedative. Dose, $\frac{1}{200}$ of a grain.

From Digitalis.—Digitalin hydrobromate. (This is a glucosid, but is placed among these drugs because it is so powerful.) Cardiac stimulant. Dose, $\frac{1}{100}$ of a grain.

From Hyoscyamus.—Hyoscine and hyoscyamine hydrobromate. Narcotic, sedative. Dose, $\frac{1}{100}$ of a grain.

From Calabar Bean.—Physostigmine or eserine, salicylate and sulphate. Sedative, myotic. Dose, $\frac{1}{20}$ of a grain.

These are best used and kept and transported in the form of hypodermic tablets. Those made by John Wyeth & Bro., of Philadelphia, are reliable.

From Jaborandi.—Pilocarpine, muriate and nitrate. Dose, $\frac{1}{30}$ of a grain.

From Scopolia (a plant closely allied to belladonna and hyoscyamus).—Scopolamine. Used in the eyes as mydriatic. Narcotic. Dose, $\frac{1}{100}$ of a grain.

From Coca.—Cocaine, hydrochlorate. Stimulant. Dose, $\frac{1}{8}$ to 1 grain.

From Scoparius.—Sparteine, sulphate. Cardiac stimulant. Dose, $\frac{1}{6}$ of a grain.

QUESTIONS TO CHAPTER VIII.

Why is mention made of the glucosides?
Which of the four is used as a vermicide?
What is a vermicide?
What is an alkaloid? Give full definition.
Name the chief alkaloids of opium and cinchona.
What is opium?
What is cinchona?

How do morphine and apomorphine differ in their physiologic effects?
What alkaloid is contained in tea?
What alkaloid is contained in belladonna?
What is cocaine the alkaloid of?
What are the doses of morphine, atrophine, digitalin, apomorphine, strychnine?
What is the name of the nux vomica alkaloid?

CHAPTER IX.

DRUGS DERIVED FROM THE ANIMAL KINGDOM.

There remains for our consideration a few medicinal substances derived from the animal kingdom.

Lard and suet have been already mentioned under fats and oils.

Lard is the internal fat from the abdomen of the hog.

Suet is the internal fat from the abdomen of the sheep.

Both are melted at a low heat, and strained to free them from adhering membrane.

Pepsinum (Pepsin).—Pepsin is a digestive ferment obtained from the inner coating of the stomach of the pig. The membrane is cut into pieces and soaked for several days in a mixture of hydrochloric acid and water. After straining, common salt is added, which causes the pepsin to separate from the solution and rise to the surface, whence it is separated and dried. When pure, it has very little odor and is soluble in water. It should be kept in a dry place. "It is largely used in cases of various character in which the digestive powers of the stomach have failed, for the purpose of supplying the place of the natural digestive ferment. Any influence for good which it possesses is dependent upon its solvent power, which is a measure of its value." If of good quality, one grain of pepsin should be able to digest 3000 grains of cooked and finely-chopped egg-albumen in six hours, at a temperature of 104° F.; and if agitated gently but

thoroughly every fifteen minutes, this should enable *ten* grains of it to digest *30,000* grains, or more than four pounds avoirdupois of similar food. Quite a fair-sized meal. Unfortunately, however, theory and practice do not always agree.

Pancreatinum (Pancreatin).—Pancreatin is the product of that organ of the digestive system known as the pancreas.

It is separated from the pancreas by mincing them, soaking them in a mixture of hydrochloric acid and water, and adding common salt, just as in making pepsin.

In the predigestion of fatty foods by pancreatin, five grains of pancreatin, if of good quality, with twenty grains of sodium bicarbonate in an ounce of water, may be added to a pint of milk and kept at a temperature of 101° F. for one hour. This is a typical formula. Special methods of preparing foods are given in the various works on therapeutics, and most physicians have their own favorite methods.

As pancreatin and pepsin both vary very much in strength, and as they require for their manufacture, in addition to knowledge, that special skill which is only obtained by long practice, it is well to know the name of some reliable maker of these substances.

Saccharum Lactis (Sugar of Milk).—Whey is first purified and freed from albuminous matter. It is then evaporated and set aside, when the sugar crystallizes out in opaque crystals somewhat resembling rock candy, only the crystals are not as transparent.

It is not medicinal but is largely used as a diluent for such drugs as the alkaloids, to give them bulk. The tablet triturates are made with sugar of milk. The homeopathic powders and pellets are made up of sugar of milk with some medicinal substance in minute quantity.

Fel Bovis (Ox Gall).—The fluid contents of the gall-bladder of the ox are mixed with alcohol, and after being left to stand for a few days the solution is filtered. The alcohol is carefully evaporated and the heat continued until a dry mass is obtained which is powdered.

Cetaceum (Spermaceti).—This is used to harden ointments with, and is a fatty substance taken from the head of the sperm-whale.

Ichthyocolla (Isinglass).—There are several forms of this substance. The official variety is the cleaned and dried swimming bladder of the fish, called the Russian sturgeon. As found in the market, however, it is derived from *other* fishes. It is used for making jelly.

It is also used for making gelatin capsules to be filled with medicines, and is the body of the little ophthalmic discs for dropping into the eye, and official in the "British Pharmacopeia" by the name of lamellæ or discs. In this connection also it may be mentioned that wafers, cachets, and capsules, being various devices for enfolding nauseating medicines before swallowing, are prepared from flour and water, which is pressed into shape between hot rollers or molded in hot molds.

NOTE.—The method of properly filling capsules, wafers, and cachets should be shown to the nurse.

Moschus (Musk).—Owing to the difficulty in being able at all times to obtain this valuable drug in a pure state it has fallen into disuse, except in large cities. Its expense, also, may have something to do with keeping it out of the market.

It is the dried and powdered secretion from the preputial

folds of the musk deer. It possesses valuable antispasmodic properties.

Acidum Lacticum (Lactic Acid).—This acid is formed when milk is allowed to ferment. The process of separation needs not to be considered.

Oleum Morrhuæ (Cod-liver Oil).—As its name implies, this oil is obtained from the livers of fresh cod-fish. They are subjected to a low-steam heat and drained.

Vitellus (Yolk of Egg).—Its use, aside from its value as a food in egg-nog, etc., is confined to emulsifying oils and rendering them more palatable as follows:

Yolk of egg.
Glycerin.
Sherry wine.
Cod-liver oil.

The glycerin and the yolk of egg are first mixed, then the oil is added and finally the wine.

Cantharis (Cantharides, Spanish Fly).—The whole insect is used.

It is ground, mixed with wax, rosin, and lard, and used as a blister.

Mixed with collodion in the form of an extract it forms cantharidal collodion.

A tincture also is prepared from them which is used externally.

Coccus (Cochineal).—The dried female insect. Its preparation is used for coloring jellies and ices. From it carmin is made. It enters as one of the ingredients into an old-fashioned domestic remedy for whooping cough; but, although it is considered antispasmodic, it is also considered

dangerous and should never be used without a physician's advice. A nurse should discountenance its domestic use as she would Mother Winslow's Soothing Syrup.

Cera Flava (Yellow Wax).—A substance deposited by the honey-bee in the form of what is called honey-comb.

Cera Alba (White Wax).—This is yellow wax bleached by the power of the sun.

Both are used in ointments, which it will be remembered are composed of oils, fats, wax, etc.

The preceding pages include, it is believed, the essential facts of Materia Medica. It is complete as far as it goes, but is necessarily abridged.

The full list of official materia medica will include by name everything not mentioned in the text.

Hirudo [*heryudo*] (Leech).—There are some things which when once seen can never be forgotten, and no false thing can be passed off for the true. Such is the case with leeches. While you are in the hospital take a good look at a genuine leech and fix his general physiognomy in your mind and you will always recognize one. But knowing one by sight, it is really quite difficult to describe his personal appearance. The leech belongs to the class of animals called worms. The body is soft and capable of contraction and extension lengthwise. The body in repose varies in length from half an inch to two inches; from ¼ to ¾ of an inch thick in the middle, and tapering toward each end.

The body lies flat on its belly, but is round on the back. Leeches have no eyes. They breathe through brachiæ at the sides of the body. In sex they are hermaphrodite—male and female united in one body. They have no feet; they possess at each end of the body a sucker. By fastening themselves

by either of these suckers they move about by alternate extensions and contractions of their bodies, their steps, so to speak, being measured by the distance from sucker to sucker when extended at full stretch. They also propel themselves through the water by an undulatory or wave-like movement. In color the background is black; there are several longitudinal stripes running along the back of a dingy iron-rust color, sometimes spotted and streaked with black. The belly is a greenish-black. Leeches, when kept in a glass-jar with about three inches of their native peat, and filled every day with river water, will live indefinitely. In removing them from the water they may be handled without fear, as the skin of the hand is too tough for them to bite quickly.

They will attach themselves by their suckers, but are easily shaken or pushed off. The mouth of the leech is in the center of the anterior sucker, the head being the point which the animal advances first in its movements. The bite of the leech is instantaneous and felt scarcely more than the bite of a mosquito, and ceases instantly. Before applying, the skin should be thoroughly washed with soap and warm water, and thoroughly rinsed several times in warm water. Place the leech in a half-ounce narrow-mouthed bottle, invert it over the spot to which it is to be applied, and the leech will very soon bite. It will let go at its own pleasure; but if it is desirable to remove one, do not forcibly pull it away, but sprinkle it with salt when it will let go. After use they should be thrown away; if placed with other leeches they will all die.

QUESTIONS TO CHAPTER IX.

What is pepsin obtained from?
What is pancreatin obtained from?
Why should any special make of these substances be given the preference over others?
What use is made of sugar of milk?
What is it obtained from?
What is gelatin obtained from?
What substance is used in making capsules, wafers, and cachets?
What is the official name of the drug used to prepare blistering cerate with?
Give a short description of what a leech should look like.

THE THERMOMETER.

All bodies when heated expand.

All bodies contract when cool.

Advantage is taken of this natural phenomenon in measuring heat.

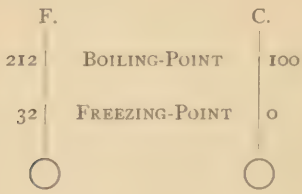
Mercury or colored alcohol is enclosed in a fine tube, and its contraction in absence of and expansion in the *presence* of heat causes it to fall or rise in the tube. This fall and rise is marked by regularly placed lines, and the distance from line to line is called a degree. In practical use as nurses you have but one thermometric scale—the Fahrenheit. But in all the latest scientific works there is another scale mentioned. It is given the preference in our "Pharmacopeia" by being mentioned first in all references to heat, and in some works has entirely superseded the Fahrenheit

scale. They are both practical applications of the same principle, but one is a hap-hazard and the other a scientific application. Either one of two fluids is used in the construction of thermometers. For most purposes mercury is applicable, registering a very high point without boiling and a very low one without freezing. It does freeze, however, at forty degrees below zero, and for very low temperatures alcohol must be used. The Fahrenheit thermometer was made in this way: A bulbous tube was fastened to a thin metallic plate, and the plate graduated off into a number of degrees from zero to several hundred. The instrument was then plunged into freezing water, and when the mercury came to a rest the point at which it happened was found to be marked thirty-two. That number was therefore adopted as the freezing-point. The instrument was then plunged into boiling water and it was found that the mercury came to a rest at 212°, which was selected as the boiling-point. Thus thirty-two *happened* to be the freezing-point and 212 the boiling-point on the Fahrenheit scale. Later, Celsius arranged a scale upon a scientific plan. He constructed his tube and attached it to an unmarked plate of metal. This was plunged into freezing water and the point at which the mercury came to rest was marked zero, or freezing. Plunged into boiling water, the point at which the mercury came to rest was called the boiling-point and was marked 100. And there being 100° from freezing to boiling, it was called the centi- grade thermometer. 100 graduations

The rules for translating the degrees of one scale into those of another are somewhat easier to remember if the reason is understood. They are based on the relative differ-

ence in the number of degrees between freezing and boiling.

The two scales placed side by side are :



It will be seen that from freezing to boiling, Fahrenheit, is 180° ; from freezing to boiling, centigrade, is 100°. These numbers reduced are as 1.8 to 1, so that every time a centigrade thermometer rises or falls one degree, the Fahrenheit thermometer rises or falls $1\frac{8}{10}$ degrees.

A perfect comprehension of the rules to be given can only be had by oral teaching, blackboard work, and the diligent application of the pupil.

To change a centigrade degree to a corresponding Fahrenheit degree, multiply the degree by 1.8, and if it is above freezing add the number to freezing Fahrenheit, which is 32. If it is below freezing, subtract it from the freezing-point.

To change Fahrenheit to centigrade, first find out how far above or below 32 degrees you are and divide by 1.8.

The figures 9 and 5 which are sometimes used are the two boiling-points reduced to their lowest *whole* numbers.

To those who understand a rule-of-three sum, the rule becomes very plain with either set of figures.

Centigrade to Fahrenheit :

C. F.
1 : 1.8 :: 10 : $X = 50$
10
1)18.0
18. + 32 = 50 = X

Or—

C. F.
5 : 9 :: 10 : $X = 50$
10
5)90
18 + 32 = 50 = X

Fahrenheit to centigrade:

F. C.
1.8 : 1 :: 50 : $X = 10$
18 32
1.8)18.0 18
10 = X

Or—

F. C.
9 : 5 :: 50 : $X = 10$
18 32
9)90 18
10 = X

Specific Gravity.—Specific gravity is the comparative weight of equal bulks, using water as the standard of comparison. When we speak of the weight of bodies in their natural condition, we speak of them as being lighter or

heavier, bulk for bulk, than water. The most exact way to take the specific gravity of a fluid is by means of the specific gravity bottle. This should be shown as well as explained. The specific gravity of water is marked 1000 and is *usually* spoken of as 1000, although it should be 1. A bottle is constructed, which when exactly filled holds 1000 grains of water. If this same bottle is filled with ether and weighed, it will be found to weigh not 1000 grains, but only $\frac{725}{1000}$ parts of that number, and its specific gravity is represented by those figures and written thus, .725. It is the weight of an equal bulk of ether. Let us take an equal bulk of chloroform. We fill the bottle and find it weighs 490 grains more than the same bulk of water did, or 1490 grains, which number with three places pointed off thus, 1.490, expresses the specific gravity of the chloroform.

In taking the specific gravity of urine, an instrument called a urinometer is almost always used. It is made of glass, in general form something like the tube of an ordinary thermometer. The tube is graduated and the bulb, which is quite large, is loaded with shot. The specific gravity of the urine is indicated by that figure on the tube, which is at the surface of the urine, when the urinometer is allowed to sink as far as it will.

As nurses you are interested in the specific gravity of blood, urine, milk, saliva, perspiration, etc. These secretions in health are of an average specific gravity in all persons. A specific gravity higher or lower than normal indicates the presence or absence of certain things, and in conjunction with variations in alkalinity, acidity, color, transparency, turbidity, etc., aids the physician in determining the nature of disease.

APPENDIX.

THERAPEUTICS.

Except as to its arrangement, the following definitions and classifications have been taken from a lecture by Prof. L. E. Sayre, Ph.G., Professor of Materia Medica and Pharmacy in the School of Pharmacy of the University of Kansas, and published in the "Pharmaceutical Era," December 19, 1895.

The nurse is trained not to prescribe. But such a knowledge of therapeutics as is given here will render her a more valuable assistant to the physician; will aid in making her an accomplished nurse.

Therapeutics is especially concerned with the application of medicinal substances and remedial agents to the treatment of diseased or morbid conditions of the human economy, with a view to its restoration to a normal and healthy condition.

A person who undertakes such a responsibility without previous knowledge, theoretic and practical, of the sciences which apply thereto, as a preparation for so sacred a trust, is well characterized as a quack. A consideration of the following pages will convince the nurse of the difficulties in placing the seat of disease and the folly of using, or rather of

abusing her training in the art of nursing by attempting to prescribe.

INTERNAL REMEDIES.

DRUGS AFFECTING NUTRITION.

Hematics restore the quality of the blood, exerting a direct influence on its composition. Iron and its preparations, manganese, cod-liver oil are hematics.

Alkalies act in the concentrated forms as caustics. Diluted alkalies, if given before meals, stimulate the production of the acid gastric juice. Liquor potassa, sodium carbonate, and bicarbonate, ammonium carbonate, lime-water, milk of magnesia are alkalies. Diluted they also act as antacids, when there is an excess of acid fluid in the stomach.

Acids affect nutrition in a manner opposite to the alkalies. If administered before meals, they check hyperacidity of the stomach, by stimulating the production of the alkaline pancreatic juice and checking that of the acid gastric juice. Hydrochloric acid is the one most commonly used.

Digestants effect the solution of food in the alimentary canal. Pepsin, pancreatin, papoid, caroid are digestants.

Antipyretics reduce the temperature of the body, either by reducing the circulation or diminishing tissue change, or favoring the loss of heat through radiation and conduction. Quinine, aconite, antipyrine, and antimony are antipyretics.

Alteratives alter the course of morbid conditions, modifying the nutritive processes while promoting waste, by stimulating secretion, absorption, and the elimination of morbid deposits. They are employed in the treatment of phthisis,

syphilis, gout, neuralgia, and asthma, and the preparations of arsenic, mercury, and iodin, and the various compounds called "Spring medicines" are used as alteratives.

DRUGS AFFECTING THE NERVOUS AND MUSCULAR SYSTEMS.

1. Through the Brain.

Cerebral excitants increase the functional activity of the cerebrum without causing any subsequent depression of brain function. Camphor, valerian, caffeine, cannabis.

Cerebral depressants lessen the brain activity. Some of them are employed as hypnotics and analgesics, which see.

Narcotics lessen the sensibility to pain and cause sleep, and in overdoses will produce coma, ending in death. Opium, belladonna, morphine, etc.

Hypnotics induce sleep, often abolish pain, and cause neither deliriant nor narcotic effects. Chloral, sulphonal, trional, and the bromids are hypnotics.

Analgesics relieve pain by their effect upon the sensory centers.

Anesthetics suspend consciousness and temporarily destroy sensation. They are general in their action when taken or inhaled, and local when applied. Ether, chloroform, nitrous oxid are general; cocaine, carbolic acid, ether spray, and ethyl chlorid are local anesthetics.

2. Through the Spinal Cord.

Motor excitants increase the functional activity of the spinal cord and the motor apparatus, invigorating the action of the heart and lungs. Nux vomica, strychnine.

Motor depressants lower the functional activity of the

spinal cord and motor apparatus. Alcohol, opium, aconite, belladonna are motor depressants.

NOTE.—It will be noticed that the same drug is found under more than one heading. A classification which would embrace the physiologic action of all the remedial agents – one that would be entirely satisfactory— is impossible, because of the great variety of effects of certain individual remedies.

3. Through the Nerve Center and Ganglionic System.

Antispasmodics prevent or allay irregular action or spasm of both the voluntary and involuntary muscles. This is accomplished frequently by a sedative influence upon the nerve centers, while others exert their influence by stimulating those centers. Alcohol, ether, valerian, camphor, musk, asafetida, the bromids.

Tonics increase the vigor and tone of the system by improving the appetite, favoring digestion and assimilation, and adding strength to the circulatory system. Gentian, cinchona, calumba.

Antiperiodics are tonics which prevent or check the return of diseases which recur periodically. Quinine.

4. Through the Heart and Circulatory System.

Cardiac stimulants increase the heart's action, the force and frequency of the pulse. Ether, alcohol, nitroglycerin, sparteine, etc.

Cardiac sedatives allay and control palpitation and overaction of the heart. Aconite, veratrum, digitalis, antimony, etc.

Vascular stimulants dilate the peripheral vessels and in-

crease the peripheral circulation. Ammonia, digitalis, strophanthus.

Vascular sedatives lessen the capillary circulation and raise the blood-pressure by stimulating the vasomotor center of its mechanism. Ergot, opium, salts of iron.

5. Through the Excretories.

Diuretics increase the secretion of urine, acting either directly on the secreting cells of the kidneys, or by raising the general or local arterial tension. Squill, scoparius, triticum, etc.

Renal depressants lower the activity of the renal cells, thereby lessening the urinary secretion.

Vesical tonics and sedatives act upon the bladder; in the one case increasing the tone of the muscular fibers, as by strychnine, cantharides, and belladonna; in the other, lessening the irritability of that organ, as by opium, buchu, uva ursi, etc.

Urinary sedatives exert a sedative action upon the urinary tract. Copaiba, cubebs, etc.

Diaphoretics and sudorifics increase the secretion of the skin and promote perspiration. Dover's powder, jaborandi, camphor, sweet spirit of niter.

Anhidrotics check perspiration. Atropine.

Antilithics prevent the formation of insoluble concretions, or dissolve them when formed in the ducts. Salts of lithia and potassium, benzoic acid.

DRUGS AFFECTING SPECIAL ORGANS PARTLY THROUGH THE NERVOUS SYSTEM.

1. Drugs Affecting the Organs of Respiration.

Expectorants are used to facilitate the expulsion of bronchial secretions and to modify their character when abnormal. Ammonium chlorid, squills, tolu, licorice.

Pulmonary sedatives allay the irritability of the respiratory center and the nerves of the lungs and bronchial tubes. Belladonna, opium, hyoscyamus, hydrocyanic acid.

Errhines affect locally the nasal mucous membrane, produce sneezing, and increase the nasal secretions.

Sternutatories and errhines are similar in their action. Sanguinaria, veratrine.

2. Affecting the Alimentary Canal.

Sialagogues promote the secretion and flow of saliva from the salivary glands. Mezereum, the antimonials.

Emetics cause vomiting, acting either directly on the nerves of the stomach or through the blood on the vomiting center, or by reflex irritation of the vomiting center. Mustard, zinc sulphate, apomorphine, ipecac, tartar emetic.

Purgatives produce evacuation of the contents of the intestinal canal, increasing secretion along its tract and exciting peristaltic action. Podophyllum, colocynth, jalap, magnesium sulphate.

Astringents produce contraction of muscular fiber, and lessen secretions from mucous membranes. Tannic and gallic acid, alum, persulphate of iron.

Stomachics increase the appetite and promote gastric digestion. They also check fermentation and dispel the gases in the stomach arising from it. Peppermint, cardamom, ginger, etc.

3. Drugs Affecting the Liver.

Hepatic stimulants or cholagogues excite the liver and increase the functional activity of that organ. As stimulants they increase the activity of the liver cells. As cholagogues they remove the bile from the duodenum. Podophyllum, aloes, jalap, calomel.

Hepatic depressants reduce the functional activity of the liver. Opium, quinine, arsenic, antimony.

4. Affecting the Generative System.

Ecbolics or *oxytoxics* stimulate the pregnant uterus and produce contraction of that organ. Ergot, cotton-root, savine.

Emmenagogues stimulate the uterine muscular fibers and restore the normal menstrual function. Ergot, iron.

Aphrodisiacs excite the function of the genital organs when they are morbidly depressed. Phosphorus, zinc phosphid.

Anaphrodisiacs diminish morbid sexual desire. The bromids, camphor.

5. Affecting the Eyes (Ciliary Muscle).

Mydriatics cause dilatation of the pupil and temporarily destroy accommodation by paralysis of the ciliary muscle. Atropine, homatropine.

Miotics contract the pupil. Pilocarpine, eserine.

EXTERNAL REMEDIES.

Irritants produce effects upon the skin. As rubefacients they redden the skin; as epispastics they blister; as escharotics they destroy the skin. Mustard, cantharides, caustic potash.

Local sedatives diminish irritation when applied to the skin. Demulcents soothe and allay inflamed mucous surfaces. Emollients do the same for the skin. Mucilages of acacia, flax, etc., are demulcents; bland oils, etc., are emollients.

Agents which Act upon Organisms that Infest the Human Body.

Antiseptics arrest and prevent putrefaction.

Disinfectants decompose and render noxious gases harmless.

Antizymotics arrest fermentation.

Anthelmintics destroy the parasitic worms of the intestine. Santonine, spigelia.

Tenifuges destroy tapeworms. Pumpkin seed, male fern.

Antiparasitics destroy lice and other body vermin. Mercurial ointment, tincture of larkspur seed.

TOXICOLOGY.

Toxicology is the study of that branch of medical science which concerns poisons and their effects.

By a poison is meant any substance which, when introduced into the animal system, will produce painful or dangerous disorder or death. The study is more especially directed to the effects and antidotes to the effects of those drugs which, from the smallness of their fatal dose, the rapidity with which they act, and the difficulties encountered in their detection, are used with criminal intent by murderers and suicides, besides their occasional mistaken administration by physicians, pharmacists, or nurses.

Nurses are instructed to recognize certain stages in the rise, progress, and subsidence of diseases, and they should therefore be able to distinguish in a general way the symptoms caused by poisoning.

The action of a poison is sudden. The symptoms of irritation of the stomach are violent. The disturbances to the heart, lungs, and brain are more profound, or else become so more suddenly than in the course of ordinary disease. Muscular contortions are more violent. And all the symptoms reach a higher point, and very much more rapidly, than they do in the course of ordinary disease.

Poisons are divided into two classes—the irritants and the narcotics.

The irritant poisons take effect immediately on coming in contact with the digestive tract. They cause burning pains

in the mouth, throat, and stomach, the effects, in the case of a volatile poison like ammonia, extending even to the nasal passages. The coatings of the mouth, approaches to the stomach, the stomach itself, and the intestines, are partly or wholly destroyed. Such severe treatment of these vital organs causes faintness and shock. And, altogether, the ill effects of an irritant poison are so plainly to be seen that the question springs instinctively to the lips of the observer, "What have you been taking?"

The contrary is the case with narcotic poisons. They do not act until they have entered the circulatory system. Herein lies their greatest danger, for the symptoms do not appear until some time after the poison has been swallowed, when it is too late to hope to arrest the ill effects by emptying the stomach. This, however, is always done the first thing.

Narcotic poisons, besides some *special* effects peculiar to some of them, and by which we may recognize the drug used, produce a drowsiness which rapidly increases and passes beyond the control of the patient; unconsciousness, coma, and death following in rapid order unless relief is obtained.

ANTIDOTES.

A physician is invariably to be sent for upon the discovery of a poisoned person.

Antidotes are of two kinds, chemic and physiologic. In order to intelligently treat a poisoned person, the nature of the poison should be ascertained first, whenever possible. Many times it is impossible. The patient may be unconscious, or may not wish to tell, or, perhaps, has taken the poison accidentally and does not know.

It is the custom, except when *corrosive* poisons have been swallowed, to empty the stomach by an emetic or the stomach-pump. The fact that a corrosive poison *has* been swallowed may be ascertained by observing the condition of the mouth. It may be blistered, usually turning white, and even be destroyed and bleeding in spots. And an emetic in such a condition would make the injury still more serious, by reason of the exertions made in vomiting.

The most common emetic, one almost always at hand, is mustard. A tablespoonful of it mixed with a tumbler of warm water and given the patient will usually cause vomiting soon after it has been swallowed. Large drafts of warm water or warm water and salt also act as emetics. If the aid of the patient can be secured, the finger run down the throat will cause vomiting. These are the only emetic substances and methods ordinarily at hand. Others will occur to a physician according to circumstances.

If the nature of the poison is known to be chemic, and the particular chemical used can be found out, a chemic antidote may be given. By a chemic antidote is meant one that, when swallowed, will decompose the poisonous chemical and form an insoluble compound of it. By this act its poisonous action is arrested, for nothing of the kind can enter the system to its injury, unless it will dissolve in the fluids of the stomach. Immediately after giving the antidote give an emetic to remove everything from the stomach. As an instance: sugar of lead is poisonous. But if sulphate of magnesia be swallowed on top of it, it will be changed to the *sulphate* of lead, which is harmless, because it is insoluble and incapable of being assimilated.

A physiologic antidote must counteract the effects which

are being produced by a drug which has passed beyond the reach of chemic antidotes and has entered the system. And the administration of such antidotes, beyond the ordinary stimulants, is the business of the physician and concerns the nurse only as the faithful follower of his directions.

The common stimulants spoken of are strong coffee, brandy, and ammonia. Also, untiring efforts to keep the patient from yielding to the irresistible drowsiness of narcotics by walking, dousing with cold water, slapping, etc.

The following table includes the common poisons, their general symptoms, and antidotes:

IRRITANT POISONS.

Name.	Symptoms.	Antidote.
Hydrochloric acid. Nitric acid. Sulphuric acid. Oxalic acid. Carbolic acid.	Burning pain in mouth and approaches to the stomach. Surface white and destroyed in patches.	Emetics *not* to be given. Milk and lime-water. Oils. Bicarbonate of soda.
Potash. Soda. Ammonia water. Washing soda. Lye.	Pain and burning of stomach. Destruction of the coating of the mouth and throat.	*No emetics.* Oils. Vinegar. Milk. Fat of any kind—like butter, if oil is not at hand.
Blue vitriol. Sugar of lead. Zinc salts. Mercury salts. Bed-bug poison.	Pains in bowels, and the sudden and severe illness peculiar to poison, never to disease.	For copper salts—iron filings and whites of eggs. For mercury salts—the whites of eggs beaten with water. For lead salts—sulphate of magnesia. For zinc salts—carbonate of soda. *All* followed by emetic.

Arsenic deserves special mention. Its available forms are numerous and easily obtained; it is the most frequent re-

course of the suicide. The nurse should know its antidote and demand its *fresh* preparation for the occasion, as it is otherwise of no value as an antidote. Call for the *freshly* prepared hydrate of iron.

The following are the common forms of arsenic :

NAME.	SYMPTOMS.	ANTIDOTE.
Paris green. Scheele's green. Green wall paper (babies swallow it). Common arsenic. Ratsbane. Rough on rats. Fowler's or Donovan's solution.	Pain, vomiting, great thirst.	Stomach-pump. Hydrate of iron and emetic or stomach-pump again, leaving some hydrate of iron in the stomach at last.
Phosphorus. Sulphur matches.	Pain, vomiting.	Magnesia and water.

THE NARCOTIC POISONS.

Opium and all its preparations: Tincture, deodorized tincture, paregoric, wine of opium, vinegar of opium, morphine and its salts, Dover's powder, Tully's powder.

A teaspoonful of laudanum or any other of the fluid preparations is a dangerous dose. Two grains of morphine is a dangerous dose.

The symptoms are: Drowsiness, pin-point pupils, slow and stertorous breathing with occasional cessation of breath, blueness of skin.

Antidotes.—Stimulants of all kinds,—internal and external.

The following list of drugs are narcotics with irritant power also; they are most commonly used as tinctures or fluid extracts; more than ten grains of the powdered drug,

or ten minims of the fluid extracts, or sixty minims of the tinctures are dangerous doses:

Aconite,
Belladonna,
Cantharides,
Digitalis,
Hyoscyamus.

The symptoms, to the eye accustomed to observe the symptoms of disease, are quickly perceived as being something unusual and to call for the presence of the physician at once. He alone can determine the nature of the poison.

The laws of the various States forbid the sale of poisonous drugs, except under restrictions. And for a person to sell or give away or to advise the use of any drug or instrument for the purpose of producing abortion, whether the person die or not, is punishable by *both* fine and imprisonment.

QUESTIONS ON CHAPTER ON TOXICOLOGY.

Define toxicology.
Describe some of the differences between the symptoms of disease and poisoning.
Into what two classes are poisons divided?
Describe the general symptoms produced by an irritant poison.
Describe the general symptoms produced by a narcotic poison.
How many kinds of antidotes are there, and what are they?
When must we avoid giving emetics?
How would you prepare a common emetic?
What is a chemic antidote?

GLOSSARY.

A COMPLETE LIST OF ALL THE OFFICIAL DRUGS, THE PREPARATIONS OF THEM, AND THE CHEMICALS; THE LATIN NAME; THE ENGLISH NAME; THE SYNONYM, IF THERE IS ONE; THE PART OF THE PLANT USED OR ORIGIN IF A CHEMICAL; ITS MEDICINAL USE AND DOSE.

Absin'thium. Absinthium. Wormwood. The leaves and tops of the plant. Stimulant. Dose, 5 to 30 grs., or 0.325 to 2.0 gm.

Aca'cia. Acacia. Gum Arabic. The gummy exudation from the tree. Demulcent. Dose, 5 to 30 grs., or 0.325 to 2.0 gm.

Acetanili'dum. Acetanilid. Antifebrin. One of the derivatives of coal-tar. Antipyretic. Dose, 1 to 10 grs., or 0.065 to 0.65 gm.

Ace'tum o'pii. Vinegar of opium. Black drop. Prepared from gum opium. Anodyne. Dose, 10 ♏, or 0.65 c.c.

Ace'tum scil'læ. Vinegar of squill. Prepared from the sliced bulb. Expectorant; emetic. Dose, 10 to 30 ♏, or 0.65 to 2.0 c.c.

Ac'idum ace'ticum. Acetic acid. By distillation of wood. It forms the class of salts called acetates. Thirty-six per cent.

Ac'idum ace'ticum dilu'tum. Diluted acetic acid. Ten per cent.

Ac'idum ace'ticum glaci'ale. Glacial or absolute acetic acid. (These three are the same acids, differing in strength.)

Ac'idum arseno'sum. Arsenous acid. White arsenic. Alterative. Dose, $\frac{1}{60}$ to $\frac{1}{20}$ gr., or 0.001 to 0.003 gm.

Ac'idum benzo'icum. Benzoic acid. Made from gum benzoin. Stimulant; expectorant. Dose, 10 to 30 grs., or 0.65 to 2.0 gm.

Ac'idum bo'ricum. Boric or boracic acid. Made from borax by the action of hydrochloric acid. Antiseptic. Dose, 10 to 30 grs., or 0.65 to 2.0 gm.

Ac'idum carbol'icum. Carbolic acid. Phenol. Distilled from coal-tar. Used in nausea. Dose, 1 to 3 ♏, or 0.065 to 0.195 c.c.

Ac'idum carbol'icum cru'dum. Crude carbolic acid. Used as a disinfectant.

Ac'idum chro'micum. Chromic acid. Originates in combination as an ore. Escharotic.

Ac'idum cit'ricum. Citric acid. Prepared from lemon juice. Refrigerant. Dose, 10 to 30 grs., or 0.650 to 2.0 gm.

Ac'idum gal'licum. Gallic acid. Prepared from tannic acid. Astringent. Dose, 5 to 10 grs., or 0.325 to 0.650 gm.

Ac'idum hydrobro'micum dilu'tum. Diluted hydrobromic acid. From potassium bromid by action of sulphuric acid. Hypnotic. Dose, ½ to 2 drams, or 2.0 to 8.0 c.c.

Ac'idum hydrochlo'ricum. Hydrochloric acid. Muriatic acid. 31.9 per cent. From sodium chlorid by action of sulphuric acid. Tonic. Dose, 5 to 10 ♏, or 0.325 to 0.650 c.c.

Ac'idum hydrochlo'ricum dilu'tum. Diluted hydrochloric acid. Ten per cent. Tonic. Dose, 10 to 30 ♏, or 0.650 to 2.0 c.c.

Ac'idum hydrocya'nicum dilu'tum. Two per cent. Diluted hydrocyanic acid. Prussic acid. Sedative. Dose, 1 to 3 ♏.

Ac'idum hypophosphoro'sum dilu'tum. Diluted hypophosphorous acid. From phosphorus and lime, indirectly. Tonic. Dose, 10 to 60 ♏, or 0.650 to 4.0 c.c.

Ac'idum lac'ticum. Lactic acid. From fermented milk. Used to dissolve membranes.

Ac'idum ni'tricum. Nitric acid. Sixty-eight per cent. From potassium nitrate by sulphuric acid.

Ac'idum ni'tricum dilu'tum. Ten per cent. Diluted nitric acid. Tonic. Dose, 5 to 30 ♏, or 0.325 to 2.0 c.c.

Ac'idum nitrohydrochlo'ricum. Nitrohydrochloric acid. Nitromuriatic acid. Action between nitric and hydrochloric acids. Cholagogue. Dose, 1 to 5 ♏.

Ac'idum nitrohydrochlo'ricum dilu'tum. Diluted nitromuriatic acid. Cholagogue. Dose, 5 to 20 ♏.

Ac'idum ole'icum. Oleic acid. From oil by action of steam under pressure. It is used for preparing the oleates.

Ac'idum phospho'ricum. Phosphoric acid. Eighty-five per cent. From phosphorus by nitric acid. Nerve tonic. Dose, 1 to 10 ♏, or 0.065 to 0.650 c.c. *

Ac'idum phospho'ricum dilu'tum. Ten per cent. Nerve tonic. Dose, 5 to 30 ♏, or 0.325 to 0.650 c.c.

Ac'idum salicyl'icum. Salicylic acid. From carbolic acid by action of sodium carbonate. Antiseptic. Dose, 5 to 10 grs., or 0.325 to 0.650 c.c.

Ac'idum stear'icum. Stearic acid. From solid fats by steam under pressure. For official glycerin suppositories.

Ac'idum sulphu'ricum. Sulphuric acid. Ninety-two per cent. From sulphur fumes, steam, and oxygen gas.

Ac'idum sulphu'ricum aromat'icum. Ten per cent. Aromatic sulphuric acid. Tonic. Dose, 5 to 10 ♏, or 0.325 to 0.650 c.c.

Ac'idum sulphu'ricum dilu'tum. Diluted sulphuric acid. Tonic. Dose, 1 to 10 ♏, or 0.065 to 0.650 c.c.

Ac'idum sulphuro'sum. Sulphurous acid. Six per cent. Antiseptic. As a wash chiefly.

Ac'idum tan'nicum. Tannic acid. Extracted from nut-galls. Astringent. Dose, 1 to 10 grs., or 0.065 to 0.650 gm.

Ac'idum tartar'icum. Tartaric acid. From cream tartar. Refrigerant. Dose, 10 to 30 grs., or 0.650 to 2.0 gm.

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* Minims will probably continue to be used in measuring. But these equivalents are easily acquired by a little practice. As has been shown, it is not a matter of memory, but may be figured out in each instance mentally.

Aconi'tum. Aconite. Monkshood. The root. Narcotic. Dose, ½ to 2 grs., or 0.030 to 0.130 gm. *

A'deps. Lard. From the abdomen of the hog. Used for making ointments.

A'deps benzoina'tus. Benzoinated lard. Lard impregnated with benzoin to preserve it. Used for making ointments.

A'deps la'næ hydro'sus. Hydrous wool-fat. The purified fat from the wool of the sheep. Used for making ointments.

Æ'ther. Ether. **Æ'ther fortior.** Strong ether. Ninety-six per cent. From alcohol by action of sulphuric acid. Anesthetic. Dose, 5 to 60 ♏, or 0.325 to 4.0 c.c.

Æther ace'ticus. Acetic ether. Ninety-eight per cent. From alcohol by action of acetic acid. Stimulant. Dose, 10 to 30 ♏, or 0.650 to 2.0 c.c.

Al'cohol. Alcohol. Distilled from whisky. Eighty-seven to ninety-one per cent. Stimulant. External use.

Al'cohol absolu'tum. Absolute alcohol. 99.9 per cent. Alcohol deprived of all its water. Stimulant. Dose, ʒj, or 4.0 c.c.

Al'cohol deodora'tum. Deodorized alcohol. Ninety-five per cent. Purified alcohol.

Al'cohol dilu'tum. Diluted alcohol. Equal parts of alcohol and water.

Al'lium. Garlic. The bulb of the plant. Expectorant. Used as a syrup.

Al'oe barbaden'sis. Barbadoes aloes. The dried juice from the leaves of the true plant. Cathartic. Dose, ½ to 10 grs., or 0.033 to 0.650 gm.

Al'oe purifica'ta. Purified aloes. Aloes freed from all impurities. Cathartic. Dose, ½ to 10 grs., or 0.033 to 0.650 gm.

Al'oe socotri'na. Socotrine aloes. The dried juice from the leaf of another variety. Cathartic. Dose, ½ to 10 grs., or 0.033 to 0.650 gm.

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* Let the nurse remember how these figures are read: 2.0 gm. is two grams; 0.030 gm. is thirty thousandths of a gram, or, as we call it, thirty *milli*grams.

Aloi'num. Aloin. Abstracted from aloes. Cathartic. Dose, ¼ to 2 grs., or 0.016 to 0.130 gm.*

Al'thea. Marshmallow. The root. Demulcent. Used as a syrup.

Alu'men. Alum. Potash alum. From aluminum and potassium with sulphuric acid. Astringent. Dose, 10 to 60 grs., or 0.650 to 4.0 gm.

Alu'men exsicca'tum. Dried alum. } Both the same.
Alu'men us'tum. Burned alum. }
Astringent. Dose, 10 to 60 grs., or 0.65 to 4.0 gm.

Alu'mini hy'dras. Aluminum hydrate. By decomposition of alum.

Alu'mini sul'phas. Aluminum sulphate. From aluminum by sulphuric acid. Astringent wash.

Ammoni'acum. Ammoniac. A gum-resin from a plant. Stimulant; expectorant. Used in mixtures.

Ammo'nii ben'zoas. Ammonium benzoate. From ammonia by benzoic acid. Stimulant. Dose, 10 grs., or 0.65 gm.

Ammo'nii bro'midum. Ammonium bromid. From ammonia by hydrobromic acid. Hypnotic. Dose, 10 to 60 grs., or 0.65 to 4.0 gm.

Ammo'nii car'bonas. Ammonium carbonate. From ammonia by fresh carbonic acid.† Stimulant. Dose, 1 to 10 grs., or 0.065 to 0.65 gm.

Ammo'nii chlori'dum. Ammonium chlorid. From ammonia by hydrochloric acid. Stimulant; expectorant. Dose, 2 to 15 grs., or 0.130 to 1.0 gm.

Ammo'nii io'didum. Ammonium iodid. From ammonia by iodin. Alterative. Dose, 1 to 10 grs., or 0.065 to 0.65 gm.

Ammo'nii ni'tras. Ammonium nitrate. From ammonia by nitric acid Stimulant. Dose, 5 to 15 grs., or 0.325 to 1.0 gm.

Ammo'nii vale'rianas. Ammonium valerianate. From ammonia by valerianic acid. Sedative. Dose, 1 to 5 grs., or 0.065 to 0.325 gm.

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* It is well that the nurse be shown sets of these weights. They are useful object-lessons.

† These processes are not by any means as simple as they appear by these statements. Nevertheless, these answers are useful and may be enlarged upon if the instructor so desires.

Amyg′dala ama′ra. Bitter almond. The seed. Used in form of syrup as a vehicle.

Amyg′dala dul′cis. Sweet almond. The seed. Used in mixtures for a vehicle.

A′myl ni′tris. Amyl nitrite. From amylic alcohol by nitrous acid. Stimulant. By inhalation, 2 to 5 drops.

Am′ylum. Starch. From corn or other grains. Externally as an absorbent.

Ani′sum. Anise. The fruit. Carminative. Dose, 5 to 30 grs., or 0.325 to 2.0 gm.

An′themis. Chamomile. The flower heads. Tonic. Dose, 5 to 30 grs., or 0.325 to 2.0 gm.

Antimo′nii et potas′sii tar′tras. Antimony and potassium tartrate. Tartar emetic. From antimony and potassium by tartaric acid. Expectorant; emetic. Dose, $\frac{1}{8}$ to 5 grs., or 0.008 to 0.325 gm.

Antimo′nii ox′idum. Antimony oxid. From antimony chlorid by ammonia. Alterative. Dose, 1 to 3 grs., or 0.065 to 0.195 gm.

Antimo′nii sul′phidum. Antimony sulphid. Occurs native.

Antimo′nii sul′phidum purifica′tum. Purified antimony sulphid.

Antimo′nium sulphura′tum. Sulphurated antimony. Kermes mineral. Alterative. Dose, 1 to 3 grs., or 0.065 to 0.195 gm.

Apoc′ynum. Canadian hemp. The root. Diaphoretic. Dose, 5 to 30 grs., or 0.325 to 2.0 gm.

Apomorphi′næ hydrochlo′ras. Apomorphine hydrochlorate. From morphine by hydrochloric acid. Emetic. Dose, $\frac{1}{10}$ gr., or 0.006 gm.

A′qua. Water. Natural water in its purest attainable state.

A′qua ammo′niæ. Ammonia water. A solution of ammonia gas. Ten per cent.

A′qua ammo′niæ for′tior. Stronger water of ammonia. Twenty-eight per cent.

A′qua amyg′dalæ ama′ræ. Bitter almond water. Made from the oil. Vehicle for other medicines.

A'qua ani'si. Anise water. Made from the oil. Carminative *ad lib.* and as a vehicle.

A'qua auran'tii flo'rum. Orange-flower water. Equal parts of the strong water and distilled water. For flavoring purposes.

A'qua auran'tii flo'rum for'tior. Strong orange-flower water. Distilled from the flowers.

A'qua cam'phoræ. Camphor water. From the gum. Sedative. Dose, f℥ss to f℥ij, or 2.0 to 8.0 c.c.

A'qua chlo'ri. Chlorine water. From hydrochloric acid. Antiseptic wash.

A'qua chlorofor'mi. Chloroform water. Chloroform dissolved in water. Stimulant. Dose, f℥j to f℥iv, or 4.0 to 16.0 c.c.

A'qua cinnamo'mi. Cinnamon water. From the oil. Carminative. Dose, f℥ss to f℥ij, or 2.0 to 8.0 c.c.

A'qua creoso'ti. Creosote water. From creosote. Used in nausea mixtures. Dose, f℥ to f℥ij, or 4.0 to 8.0 c.c.

A'qua destilla'ta. Distilled water.

A'qua fœnic'uli. Fennel water. From the oil. Carminative. Dose, f℥ss to f℥ij, or 2.0 to 8.0 c.c.

A'qua hydrogen'ii diox'idi. Solution of hydrogen dioxid. This should be permanent and neutral.

A'qua men'thæ piperi'tæ. Peppermint water. From the oil. Carminative. Dose, f℥ss to f℥ij, or 2.0 to 8.0 c.c.

A'qua men'thæ vir'idis. Spearmint water. From the oil. Carminative. Dose, f℥ss to f℥ij, or 2.0 to 8.0 c.c.

A'qua ro'sæ. Rose water. Equal parts of the strong rose water and distilled water. For flavor.

A'qua ro'sæ for'tior. Strong rose water. Distilled from the flowers.

Argen'ti cyan'idum. Silver cyanid. From silver by hydrocyanic acid. Sedative. Dose, $\frac{1}{60}$ to $\frac{1}{20}$ gr., or 0.001 to 0.003 gm.

Argen'ti iod'idum. Silver iodid. From silver by iodin. Alterative. Dose, ½ to 2 grs., or 0.033 to 0.130 gm.

Argen'ti ni'tras. Silver nitrate. From silver by nitric acid. Tonic. Dose, $\frac{1}{8}$ to $\frac{1}{2}$ gr., or 0.008 to 0.033 gm.

Argen'ti ni'tras dilu'tus. Diluted silver nitrate. Mitigated caustic. Escharotic.

Argen'ti ni'tras fu'sus. Fused silver nitrate. Molded silver nitrate. Lunar caustic. Caustic silver. Escharotic.

Argen'ti ox'idum. Silver oxid. Decomposition of the nitrate. Tonic. Dose, $\frac{1}{2}$ to 2 grs., or 0.033 to 0.130 gm.

Ar'nicæ flo'res. Arnica flowers.

Ar'nicæ ra'dix. Arnica root. The flowers and root of the same plant. Externally for bruises, etc.

Ar'seni iod'idum. Arsenic iodid. From arsenic by iodin. Alterative. Dose, $\frac{1}{20}$ to $\frac{1}{8}$ gr., or 0.003 to 0.008 gm.

Ascle'pias. Pleurisy root. Diaphoretic. Dose, 5 to 30 grs., or 0.325 to 2.0 gm.

Aspid'ium. Male fern. The root. Teniacide. The oil is used.

Aspidosper'ma. Quebracho. The bark. Antiperiodic. Dose, 5 to 30 grs., or 0.325 to 2.0 gm.

Assafœ'tida. Asafetida. A gum resin. Sedative. Dose, 5 to 30 grs., or 0.325 to 2.0 gm.

Atropi'na. Atropine. Alkaloid from belladonna. Narcotic. Dose, $\frac{1}{64}$ gr., or 0.001 gm.

Atropi'næ sul'phas. Atropia sulphate. From belladonna. Narcotic. Dose, $\frac{1}{100}$ to $\frac{1}{60}$ gr., or 0.0006 * to 0.001 gm.

Auran'tii ama'ri cor'tex. Bitter orange peel. Used as tincture for flavor.

Auran'tii dul'cis cor'tex. Sweet orange peel. Used as tincture for flavor.

Au'rii et so'dii chlo'ridum. Gold and sodium chlorid. Alterative. Dose, $\frac{1}{16}$ to $\frac{1}{8}$ gr., or 0.004 to 0.008 gm.

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* Fractional parts of milligrams are read decimally, and this reads as six tenths of a milligram, the decimal point being understood.

B.

Balsa'mum peruvia'num. Balsam of Peru. From a South American tree. Externally.

Balsa'mum toluta'num. Balsam of Tolu. From the tree. Used as an expectorant in the form of syrup.

Ba'rii diox'idum. Barium dioxid. For preparing hydrogen dioxid.

Belladon'næ fo'lia. Belladonna leaves. } From the same plant.
Belladon'næ ra'dix. Belladonna root. }
Narcotic. Dose, 1 to 3 grs., or 0.065 to 0.195 gm.

Benzi'num. Benzin. Distilled from petroleum.

Benzoi'num. Benzoin. A gum resin. Stimulant; expectorant. Dose, 5 to 30 grs., or 0.325 to 2.0 gm.

Bismu'thi ci'tras. Bismuth citrate. From bismuth nitrate and citric acid. Astringent. Dose, 5 to 10 grs., or 0.325 to 0.65 gm.

Bismu'thi et ammo'nii ci'tras. Bismuth and ammonium citrate. Astringent. Dose, 5 to 10 grs., or 0.325 to 0.65 gm.

Bismu'thi subcar'bonas. Bismuth subcarbonate. From bismuth nitrate and ammonia. Astringent. Dose, 5 to 10 grs., or 0.325 to 0.650 gm.

Bismu'thi subni'tras. Bismuth subnitrate. From bismuth and nitric acid.

Bro'mum. Bromin. From mineral spring waters.

Bryo'nia. Bryony. The root. Cathartic. Dose, 5 to 30 grs., or 0 325 to 2.0 gm.

Bu'chu. Buchu. The leaves. Diuretic. Dose, 5 to 30 grs., or 0.325 to 2.0 gm.

C.

Caffei'na. Caffeine. Alkaloid from tea and coffee. The citrate is used.

Caffei'na citra'ta. Citrated caffeine. From the alkaloid by citric acid. Stimulant. Dose, 2 to 5 grs., or 0.130 to 0.325 gm.

Caffei'na citra'ta efferves'cens. Effervescing citrated caffeine. Pre-

pared to effervesce when mixed with water. Stimulant. Dose, ʒj to ʒiij, or 4.0 to 12.0 gm.

Cal'amus. Sweet flag or flag root. The root. Stimulant. Dose, 5 to 30 grs., or 0.325 to 2.0 gm.

Cal'cii bromi'dum. Calcium bromid. From lime by hydrobromic acid. Sedative. Dose, 5 to 30 grs., or 0.325 to 2.0 gm.

Cal'cii car'bonas præcipita'tus. Precipitated calcium carbonate. Chalk. Used in tooth powders.

Cal'cii chlori'dum. Calcium chlorid. From lime and hydrochloric acid. Alterative. Dose, 5 to 20 grs., or 0.325 to 1.3 gm.

Cal'cii hypophos'phis. Calcium hypophosphite. From lime and phosphorus. In phthisis. Dose, 5 to 30 grs., or 0.325 to 2.0 gm.

Cal'cii phos'phas præcipita'tus. Precipitated calcium phosphate. Bone ashes, purified. Used for filtering purposes.

Cal'cii sul'phas exsicca'tus. Plaster-of-Paris. Dried calcium sulphate. Occurs as gypsum. Used for surgical purposes.

Calendu'la. Marigold. The flowers. Alterative. Dose, 5 to 30 grs., or 0.325 to 2.0 gm.

Calum'ba. Calumbo. The root. Tonic. Dose, 5 to 30 grs., or 0.325 to 2.0 gm.

Calx. Lime. Calcium oxid. Burned limestone. Used in the form of lime-water.

Calx chlora'ta. Chlorinated lime. Dry slaked lime and chlorin gas. Disinfectant. Should be kept in air-tight packages.

Calx sulphura'ta. Sulphurated lime. From calcium sulphate by hot charcoal. Alterative. Dose, $\frac{1}{10}$ to 1 gr., or 0.006 to 0.065 gm.

Cambo'gia. Gamboge. A gum resin. Cathartic. Dose, 1 to 5 grs., or 0.065 to 0 325 gm.

Cam'phora. Camphor. A gum, *so called*. Sedative. Dose, $\frac{1}{2}$ to 5 grs., or 0.033 to 0.325 gm.

Cam'phora monobroma'ta. Monobromated camphor. From camphor by bromin. Sedative. Dose, 1 to 5 grs., or 0.065 to 0.325 gm.

Can'nabis in'dica. Indian hemp. The flowers. Narcotic. Dose, 1 to 3 grs., or 0.065 to 0.195 gm.

Can'tharis. Cantharides. Spanish flies. The whole insect. Vesicant. Externally.

Cap'sicum. Cayenne or African pepper. The fruit. Stimulant. Dose, 1 to 3 grs., or 0.065 to 0.195 gm.

Car'bo anima'lis. Animal charcoal. By charring bones.

Car'bo lig'ni. Wood charcoal. By charring wood. Used in poultices as an absorbent. Carminative by absorption of gas. Dose, 1 to 3 grs., or 0.065 to 0.195 gm.

Cardamo'mum. Cardamom. The seeds. Carminative. Dose, 5 to 30 grs., or 0.325 to 2.0 gm.

Ca'rum. Caraway. The seed. Carminative. Dose, 5 to 30 grs., or 0.325 to 2.0 gm.

Caryophyl'lus. Clove. The dried, unopened flowers. Carminative. Dose, 5 to 30 grs., or 0.325 to 2.0 gm.

Cascaril'la. Cascarilla. The bark. Aromatic tonic. Dose, 5 to 30 grs., or 0.325 to 2.0 gm.

Cas'sia fis'tula. Purging cassia. The fruit. Cathartic. Dose, 5 to 30 grs., or 0.325 to 2.0 gm.

Casta'nea. Chestnut. The leaves. Antispasmodic. Dose, 5 to 30 grs., or 0.325 to 2.0 gm.

Cat'echu. Catechu. An extract from the wood. Astringent. Dose, 5 to 30 grs., or 0.325 to 2.0 gm.

Caulophyl'lum. Blue cohosh. The root. Antispasmodic. Dose, 5 to 30 grs., or 0.325 to 2.0 gm.

Ce'ra alba. White wax. Bleached honey comb. Used in making ointments.

Ce'ra fla'va. Yellow wax. Honey-comb. Used in making ointments.

Cera'tum. Cerate. White wax and lard.

Cera'tum cam'phoræ. Camphor cerate.

Cera'tum cantha'ridis. Cantharides cerate.

Cera'tum ceta'cei. Spermaceti cerate.

Cera'tum plum'bi subaceta'tis. Cerate of lead subacetate.

Cera'tum resi'næ. Resin cerate. Basilicon ointment.

Ce'rii ox'alas. Cerium oxalate.

Ceta'ceum. Spermaceti. A deposit in the head of the sperm whale.

Cetra'ria. Iceland moss. Demulcent. Used in decoction.

Char'ta potas'sii nitra'tis. Nitrate of potash paper. Inhaled by burning. It is antispasmodic.

Char'ta sina'pis. Mustard paper. Mustard leaves. Vesicant.

Chelido'nium. Celandine. The entire plant. Cathartic. Dose, 5 to 30 grs., or 0.325 to 2.0 gm.

Chenopo'dium. American wormseed. The seed. Anthelmintic. Dose, 5 to 30 grs., or 0.325 to 2.0 gm.

Chimaphi'la. Pipsissewa. The leaves. Diuretic. Dose, 5 to 30 grs., or 0.325 to 2.0 gm.

Chira'ta. Chirata. The whole plant. Tonic. Dose, 5 to 30 grs., or 0.325 to 2.0 gm.

Chlo'ral. Chloral hydrate. From alcohol by chlorin. Narcotic. Dose, 1 to 30 grs., or 0.065 to 2.0 gm.

Chlorofor'mum. Chloroform. From alcohol by chlorin and slaked lime. Anesthetic by inhalation. Stimulant. Dose, 1 to 5 ♏, or 0.065 to 0.325 c.c.

Chon'drus. Irish moss. Carragheen. Sea moss. The whole plant. Demulcent. Used in decoction.

Chrysarobi'num. Chrysarobin. From an East Indian drug commercially known as goa powder. Irritant cathartic. Dose, $\frac{1}{64}$ to $\frac{1}{12}$ gr., or 0.001 to 0.005 gm.

Cimicif'uga. Black snakeroot. The root. Antispasmodic. Dose, 5 to 30 grs., or 0.325 to 2.0 gm.

Cincho'na. Cinchona. Peruvian bark. The bark. Antipyretic; tonic. Dose, 5 to 30 grs., or 0.325 to 2.0 gm.

Cincho'na ru'bra. Red cinchona. The bark. Antipyretic. Dose, 5 to 30 grs., or 0.325 to 2.0 gm.

Cinchonidi'næ sul'phas. Cinchonidine sulphate. Alkaloid of cinchona. Antipyretic. Dose, 1 to 10 grs., or 0.065 to 0.650 gm.

Cinchoni'na. Cinchonine. Alkaloid from cinchona. Antipyretic. Dose, 1 to 10 grs., or 0.065 to 0.650 gm.

Cinchoni'næ sul'phas. Cinchonine sulphate. Alkaloid of cinchona. Antipyretic. Dose, 1 to 10 grs., or 0.065 to 0.650 gm.

Cinnamo'mum cas'sia. Cassia cinnamon. The bark. Stimulant. Dose, 5 to 30 grs., or 0.325 to 2.0 gm.

Cinnamo'mum saigon'icum. Saigon cinnamon.

Cinnamo'mum zeylan'icum. Ceylon cinnamon.

Co'ca. Erythroxylon. The leaves. Stimulant. Dose, 5 to 30 grs., or 0.325 to 2.0 gm.

Cocai'næ hydrochlo'ras. Cocaine hydrochlorate. Local anesthetic; stimulant. Dose, ⅛ to ½ gr., or 0.008 to 0.033 gm.

Coc'cus. Cochineal. The female insect. Anodyne. Dose, ½ to 2 grs., or 0.033 to 0.130 gm.

Codei'na. Codeine. Alkaloid of opium. Anodyne. Dose, ½ to 2 grs., or 0.033 to 0.130 gm.

Col'chici ra'dix. Colchicum root. **Col'chici se'men.** Colchicum seed. Alterative; anti-rheumatic. Dose, 1 to 3 grs., or 0.065 to 0.195 gm.

Collo'dium. Collodion. External use.

Collo'dium cantharida'tum. Cantharidal collodion. Externally; vesicant.

Collo'dium flex'ile. Flexible collodion. External use.

Collo'dium styp'ticum. Styptic collodion. Externally; styptic.

Colocyn'this. Colocynth; bitter apple. The fruit. Cathartic. Dose, 1 to 3 grs., or 0.065 to 0.195 gm.

Confec'tio ro'sæ. Confection of rose. Vehicle.

Confec'tio sen'næ. Confection of senna. Cathartic. Dose, ℥j to ℥iv, or 4.0 to 16.0 gm.

Coni'um. Hemlock. The fruit. Narcotic. Dose, 1 to 3 grs., or 0.065 to 0.195 gm.

Convalla'ria. Convallaria. The root. Sedative. Dose, 5 to 30 grs., or 0.325 to 2.0 gm.

Copai'ba. Balsam of copaiba. The oleoresin from the plant. Urethral stimulant. Dose, f℥ ¼ to f℥j, or 1.0 to 4.0 c.c.

Corian'drum. Coriander. The seed. Carminative. Dose, 5 to 30 grs., or 0.325 to 2.0 gm.

Creoso'tum. Creosote. Distilled from beech-wood tar. Antiseptic. Dose, 1 to 5 ♏, or 0.065 to 0.325 c.c.

Cre'ta præpara'ta. Prepared chalk. Native chalk freed from lumps. Antacid. Dose, 5 to 30 grs., or 0.325 to 2 0 gm.

Cro'cus. Spanish saffron. A portion of the flower. Emmenagogue. Dose, 5 to 30 grs., or 0.325 to 2.0 gm.

Cube'ba. Cubeb. The berry. Stimulant. Dose, 5 to 30 grs., or 0.325 to 2.0 gm.

Cu'pri sul'phas. Copper sulphate. Blue vitriol. From copper by action of sulphuric acid. Escharotic. External use.

Cus'so. Kousso. Brayera. The flowers. Anthelmintic. Dose, 2 to 4 drams, or 8 to 16 gm.

Cypripe'dium. Ladies' slipper. The root. Antispasmodic. Dose, 5 to 30 grs., or 0.325 to 2.0 gm.

D.

Decoc'tum cetra'riæ. Decoction of cetraria. Demulcent. Dose, *ad lib.*

Decoc'tum sarsaparil'læ compos'itum. Compound decoction of sarsaparilla. Alterative. Dose, f℥j to f℥iv, or 30 to 120 c.c.

Digita'lis. Digitalis. Foxglove. The leaves. Heart stimulant. Dose, ½ to 2 grs., or 0.033 to 0.130 gm.

Dulcama'ra. Bitter-sweet. The twigs. Diuretic; diaphoretic. Dose, 5 to 30 grs., or 0.325 to 2.0 gm.

E.

Elas'tica. Caoutchouc. India rubber. Used in preparing plasters.

Elateri'num. Elaterin. Active principle of the squirting cucumber. Cathartic. Dose, $\frac{1}{40}$ to $\frac{1}{10}$ gr., or 0.001 to 0.006 gm.

Elix'ir aromat'icum. Aromatic elixir. Used as a vehicle for other medicines. It is flavored with orange, lemon, anise, and coriander.

Elix'ir phos'phori. Elixir of phosphorus. One fluidram equals $\frac{1}{60}$ gr. of phosphorus. Nerve tonic. Dose, f℥j, or 4 c.c.

Emplas'trum ammoni'aci cum hydrar'gyro. * Plaster of ammoniacum and mercury. Stimulant.

Emplas'trum ar'nicæ. Arnica plaster. Stimulant.

Emplas'trum belladon'næ. Belladonna plaster. Anodyne.

Emplas'trum cap'sici. Capsicum plaster. † Stimulant.

Emplas'trum fer'ri. Iron plaster. Strengthening plaster. Stimulant.

Emplas'trum hydrar'gyri. Mercurial plaster. Alterative.

Emplas'trum ichthyocol'læ. Isinglass plaster. Court plaster.

Emplas'trum o'pii. Opium plaster. Anodyne.

Emplas'trum pi'cis burgun'dicæ. Burgundy pitch plaster. Stimulant.

Emplas'trum pi'cis cantharida'tum. Cantharidal or warming plaster Rubefacient.

Emplas'trum plum'bi. Lead plaster. Diachylon plaster. Vehicle for other plasters.

Emplas'trum resi'næ. Resin plaster. Adhesive plaster. Stimulating.

Emplas'trum sapo'nis. Soap plaster. Stimulating.

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* This being a full and complete official list, *all* the preparations are given, whether of frequent or infrequent use, and will be found very useful for reference.

† Here is an official plaster much used. Officially and homemade they are spread upon kid. As usually seen, they are mixed with rubber, spread upon muslin, and sometimes made porous. These are all spread by machinery and are preferable to the hand-spread plaster, being neater.

Emul'sum ammoni'aci. Emulsion of ammoniacum. Expectorant. Dose, one to two tablespoonfuls, or 15 to 30 c.c.

Emul'sum amyg'dalæ. Emulsion of almond. Vehicle for other medicines.

Emul'sum asafœ'tidæ. Emulsion of asafetida. Sedative. Dose, f℥iv to f℥j, or 15 to 30 c.c.

Emul'sum chlorofor'mi. Chloroform emulsion. Sedative. Dose, f℥iv to f℥j, or 15 to 30 c.c. One fluidram contains 2½ minims, or 10 drops of chloroform.

Ergo'ta. Ergot. A fungous growth upon rye. Parturient. Dose, 5 to 30 grs., or 0.325 to 2.0 gm.

Eriodic'tyon. Yerba santa. The leaves. Tonic, expectorant. Dose, 5 to 30 grs., or 0.325 to 2.0 gm.

Eucalyp'tol. Eucalyptol. Obtained from the oil of eucalyptus. Expectorant. Dose, 5 to 30 ♏, or 0.325 to 2.0 c.c.

Eucaly'ptus. Eucalyptus. The leaves. Antipyretic. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Euon'ymus. Wahoo. The bark. Alterative. Dose, 5 to 30 grs., or 0.325 to 2.0 gm.

Eupato'rium. Eupatorium. Thoroughwort or boneset. Expectorant. Dose, 5 to 30 grs., or 0.325 to 2.0 gm.

Extrac'tum aconi'ti. Extract of aconite. From the root. Sedative. Dose, $\frac{1}{10}$ to ¼ gr., or 0.006 to 0.016 gm.

Extrac'tum aconi'ti flu'idum. Fluid extract of aconite. From the root. Sedative. Dose, ½ to 2 ♏, or 0.030 to 0.130 c.c.

Extrac'tum al'oes. Extract of aloes. From the dried juice of the leaves. Cathartic. Dose, 1 to 10 grs., or 0.065 to 0.650 gm.

Extrac'tum apoc'yni flu'idum. Fluid extract of apocynum. From the root. Diaphoretic. Dose, 5 to 30 ♏, or 0.325 to 2.0 c.c. *

Extrac'tum ar'nicæ ra'dicis. Extract of arnica root. Alterative. Dose, 2 to 5 grs., or 0.130 to 0.325 gm.

* Let the nurse observe that the dose in minims of a fluid extract is the same as the number of grains of the drug. See Dose Table.

Extrac′tum ar′nicæ ra′dicis flu′idum.* Fluid extract of arnica root. Alterative. Dose, 5 to 30 ♏, or 0.325 to 2.0 c.c.

Extrac′tum aromat′icum flu′idum. Fluid extract of aromatic powder. Carminative. Dose, 5 to 30 ♏, or 0.325 to 2.0 c.c.

Extrac′tum asclepia′dis flu′idum. Fluid extract of asclepias. Diaphoretic. Dose, 5 to 30 ♏, or 0.325 to 2.0 c.c.

Extrac′tum aspidosper′matis flu′idum. Fluid extract of aspidium. From the bark. Antiperiodic. Dose, 5 to 30 ♏, or 0.325 to 2.0 c.c.

Extrac′tum auran′tii ama′ri flu′idum. Fluid extract of bitter orange peel. Stimulant. Dose, 5 to 30 ♏, or 0.325 to 2 c.c.

Extrac′tum belladon′næ folio′rum alcohol′icum. Alcoholic extract of belladonna leaves. Narcotic. Dose, 1/8 to 1/4 gr., or 0.008 to 0.016 gm.

Extrac′tum belladon′næ ra′dicis flu′idum. Fluid extract of belladonna root. Narcotic. Dose, 1 to 3 ♏, or 0.065 to 0.195 c.c.

Extrac′tum bu′chu flu′idum. Fluid extract of buchu. From the leaves. Diuretic. Dose, 5 to 30 ♏, or 0.325 to 2.0 c.c. †

Extrac′tum cal′ami flu′idum. Fluid extract of calamus. From the root. Carminative. Dose, 5 to 30 ♏, or 0.325 to 2.0 c.c.

Extrac′tum calum′bæ flu′idum. Fluid extract of calumba. From the root. Bitter tonic. Dose, 5 to 30 ♏, or 0.325 to 2.0 c.c.

Extrac′tum can′nabis in′dicæ. Extract of Indian cannabis. From the root. Narcotic. Dose, 1/3 to 1 gr., or 0.020 to 0.065 gm.

Extrac′tum can′nabis in′dicæ flu′idum. Fluid extract of Indian cannabis. From the root. Narcotic. Dose, 1 to 3 ♏, or 0.065 to 0.195 c.c. ‡

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* What has just been noted regarding the similarity of dose of *fluid* extracts and the drug may *not* be said of solid extracts, the strength of which are never alike. (See article: Extracts.)

† Notice that although the doses are very similar yet they are repeated in both systems every time. This is to familiarize the nurse with this important feature.

‡ The nurse should practise reading these figures aloud. The dose of extract of cannabis indica is from twenty to sixty-five milligrams; of the fluid extract from sixty-five to one hundred and ninety-five thousandths of a cubic centimeter.

Extrac′tum cap′sici flu′idum. Fluid extract of capsicum. From the fruit (bird peppers). Stimulant. Dose, 1 to 3 grs., or 0.065 to 0.195 gm.

Extrac′tum casta′neæ flu′idum. Fluid extract of castanea. From the leaves. Expectorant. Dose, 5 to 30 ♏, or 0.325 to 2.0 c.c.

Extrac′tum chimaph′ilæ flu′idum. Fluid extract of pipsissewa. The leaves. Diuretic. Dose, 5 to 30 ♏, or 0.325 to 2.0 c.c.

Extrac′tum chira′tæ flu′idum. Fluid extract of chirata. The entire plant. Bitter tonic. Dose, 5 to 30 ♏, or 0.325 to 2 c.c.

Extrac′tum cimicif′ugæ. Extract of black snakeroot. Alterative in asthma. Dose, 3 to 5 gr., or 0.195 to 0.325 gm.

Extrac′tum cimicif′ugæ flu′idum. Fluid extract of black snakeroot. Alterative. Dose, 5 to 30 ♏, or 0.325 to 2 c.c.

Extrac′tum cincho′næ. Extract of Peruvian bark. Tonic. Dose, 1 to 5 grs., or 0.065 to 0.325 gm.

Extrac′tum cincho′næ flu′idum. Fluid extract of cinchona. Tonic. Dose, 5 to 30 grs., or 0.325 to 2 c.c.

Extrac′tum co′cæ flu′idum. Fluid extract of coca. From the leaves. Stimulant. Dose, 5 to 30 ♏, or 0.325 to 2 c.c.

Extrac′tum col′chici ra′dicis. Extract of colchicum root. Alterative. Dose, ¼ to ¾ grs., or 0.016 to 0.048 gm.

Extrac′tum col′chici ra′dicis flu′idum. Fluid extract of colchicum root. Alterative. Dose, 1 to 3 ♏, or 0.065 to 0.195 c.c.

Extrac′tum col′chici sem′inis flu′idum. Fluid extract of colchicum seed. Alterative. Dose, 1 to 3 ♏, or 0.065 to 0.195 c.c.

Extrac′tum colocyn′thidis. Extract of colocynth. From the fruit. Cathartic. Dose, ½ to 2 grs., or 0.033 to 0.13 gm.

Extrac′tum colocyn′thidis compos′itum. Compound extract of colocynth. Cathartic. Dose, 1 to 10 grs., or 0.065 to 0.65 gm.

Extrac′tum coni′i. Extract of conium. Narcotic. Dose, ¼ to ¾ gr., or 0.016 to 0.048 gm.

Extrac′tum coni′i flu′idum. Fluid extract of conium. From the fruit. Narcotic. Dose, 1 to 3 ♏, or 0.065 to 0.195 c.c.

Extrac′tum convalla′riæ flu′idum. Fluid extract of convallaria.

From the root. Cardiac sedative. Dose, 5 to 30 ♏, or 0.325 to 2 c.c.

Extrac′tum cube′bæ flu′idum. Fluid extract of cubeb. From the berries. Stimulant; expectorant. Dose, 5 to 30 ♏, or 0.325 to 2 c.c.

Extrac′tum cus′so flu′idum. Fluid extract of cusso. From the flowers. Anthelmintic. Dose, 5 to 30 ♏, or 0.325 to 2 c.c.

Extrac′tum cypripe′dii flu′idum. Fluid extract of cypripedium. From the root. Antispasmodic. Dose, 5 ♏ to f℥ss, or 0.325 to 2 c.c.

Extrac′tum digita′lis. Extract of digitalis. From the leaves. Cardiac stimulant. Dose, ⅛ to 1 gr., or 0.008 to 0.065 gm.

Extrac′tum digita′lis flu′idum. Fluid extract of digitalis. Cardiac stimulant. Dose, ½ to 2 ♏, or 0.033 to 0.13 c.c.

Extrac′tum dulcama′ræ flu′idum. Fluid extract of bittersweet twigs. Alterative. Dose, 5 to 30 ♏, or 0.325 to 2 c.c.

Extrac′tum ergo′tæ. Extract of ergot. From the rye fungus. Parturient. Dose, 1 to 10 grs., or 0.065 to 0.65 gm.

Extrac′tum ergo′tæ flu′idum. Fluid extract of ergot. Parturient. Dose, 5 ♏ to a tablespoonful, or 0.325 to 15 c.c.

Extrac′tum eriodic′tyi flu′idum. Fluid extract of yerba santa. From the leaves. Tonic expectorant.* Dose, 5 to 30 ♏, or 0.325 to 2 c.c.

Extrac′tum eucalyp′ti flu′idum. Fluid extract of eucalyptus. From the leaves. Febrifuge. Dose, 5 to 30 ♏, or 0.325 to 2 c.c.

Extrac′tum euon′ymi. Extract of wahoo. From the bark. Laxative. Dose, 1 to 10 grs., or 0.065 to 0.65 gm.

Extrac′tum eupato′rii flu′idum. Fluid extract of boneset. From the leaves. Expectorant. Dose, 5 to 30 ♏, or 0.325 to 2 gm.

Extrac′tum fran′gulæ flu′idum. Fluid extract of buckthorn. From the bark. Cathartic. Dose, 5 to 30 ♏, or 0.325 to 2 c.c.

Extrac′tum gelsem′ii flu′idum. Fluid extract of yellow jasmine. From the root. Antispasmodic. Dose, 1 to 3 ♏, or 0.065 to 0.195 c.c.

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*These terms are not always complete. For instance, yerba santa is tonic with an *especially* tonic action on the pectoral muscles, and, therefore, a tonic expectorant.

Extrac'tum gentia'næ. Extract of gentian. From the root. Tonic. Dose, 5 to 10 grs., or 0.325 to 0.65 gm.

Extrac'tum gentia'næ flu'idum. Fluid extract of gentian. Tonic. Dose, 5 to 30 ♏, or 0.325 to 2 c.c.

Extrac'tum gera'nii flu'idum. Fluid extract of geranium. From the root. Astringent. Dose, 5 to 30 ♏, or 0.325 to 2 c.c.

Extrac'tum glycyrrhi'zæ. Extract of licorice. Expectorant. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Extrac'tum glycyrrhi'zæ flu'idum. Fluid extract of licorice. Expectorant. Dose, 5 to 30 ♏, or 0.325 to 2 c.c.

Extrac'tum glycyrrhi'zæ pu'rum.* Pure extract of licorice. Expectorant. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Extrac'tum gossyp'ii ra'dicis flu'idum. Fluid extract of cotton root. Emmenagogue. Dose, 5 to 30 ♏, or 0.325 to 2 c.c.

Extrac'tum grinde'liæ flu'idum. Fluid extract of grindelia. From the leaves. Antispasmodic. Dose, 5 to 30 ♏, or 0.325 to 2 c.c.

Extrac'tum guara'næ flu'idum. Fluid extract of guarana. Stimulant. Dose, 5 to 30 ♏, or 0.325 to 2 c.c.

Extrac'tum hæmatox'yli. Extract of logwood. From the wood. Astringent. Dose, 1 to 10 grs., or 0.065 to 0.65 gm.

Extrac'tum hamamel'idis flu'idum.† Fluid extract of witch hazel. From the leaves. Hemostatic. Dose, 5 to 30 ♏, or 0.325 to 2 gm.

Extrac'tum hydras'tis flu'idum. Fluid extract of golden seal. From the root. Alterative. Dose, 5 to 30 ♏, or 0.325 to 2 c.c.

Extrac'tum hyoscy'ami. Extract of henbane. From the leaves. Anodyne. Dose, ¼ to ¾ gr., or 0.016 to 0.048 gm.

Extrac'tum hyoscy'ami flu'idum. Fluid extract of henbane. Anodyne. Dose, 1 to 3 ♏, or 0.065 to 0.195 c.c.

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* This pure extract and the extract are the forms which come in cylindrical sticks and known as "black" licorice.

† This should not be confounded with the *distilled* fluid extract from the twigs, of which Pond's extract is the type.

Extrac'tum ipecacuan'hæ flu'idum. Fluid extract of ipecac. From the root. Emetic; diaphoretic. Dose, 5 to 30 ♏, or 0.325 to 2 c.c.

Extrac'tum iri'dis. Extract of blue flag. From the root. Stimulant; carminative. Dose, 1 to 10 ♏, or 0.065 to 0.65 gm.

Extrac'tum iri'dis flu'idum. Fluid extract of blue flag. Carminative Dose, 5 to 30 ♏, or 0.325 to 2 c.c.

Extrac'tum jala'pæ. Extract of jalap. From the root. Cathartic. Dose, 1 to 5 grs., or 0.065 to 0.325 gm.

Extrac'tum juglan'dis. Extract of butternut bark. Laxative. Dose 5 to 30 grs., or 0.325 to 2 gm.

Extrac'tum krame'riæ flu'idum. Fluid extract of krameria. Root. Astringent. Dose, 5 to 30 ♏, or 0.325 to 2 c.c.

Extrac'tum lap'pæ flu'idum. Fluid extract of lappa. From the root. Alterative. Dose, 5 to 30 ♏, or 0.325 to 2 c.c.

Extrac'tum leptan'dræ. Extract of leptandra. From the root. Cathartic. Dose, 1 to 5 grs., or 0.065 to 0.325 gm.

Extrac'tum leptan'dræ flu'idum. Fluid extract of leptandra. Cathartic. Dose, 5 to 30 ♏, or 0.325 to 2 c.c.

Extrac'tum lobe'liæ flu'idum. Fluid extract of lobelia. From the leaves. Antispasmodic; emetic. Dose, 1 to 3 ♏, or 0.065 to 0 195 c.c.

Extrac'tum lupuli'ni flu'idum. Fluid extract of lupulin. From the powder. Hypnotic. Dose, 5 to 30 ♏, or 0.325 to 2 c.c.

Extrac'tum mat'ico flu'idum. Fluid extract of matico leaves. Stimulant; urinary. Dose, 5 to 30 ♏, or 0.325 to 2 c.c.

Extrac'tum menisper'mi flu'idum. Fluid extract of menispermum. From the root. Alterative. Dose, 5 to 30 ♏, or 0.325 to 2 c.c.

Extrac'tum meze'rei flu'idum. Fluid extract of mezereum. From the bark. Vesicant; stimulant. Dose, 5 to 30 ♏, or 0.325 to 2 c.c.

Extrac'tum nu'cis vom'icæ. Extract of nux vomica. From the seeds. Tonic. Dose, ¼ to 1 gr., or 0.016 to 0.065 gm.

Extrac'tum nu'cis vom'icæ flu'idum. Fluid extract of nux vomica. Tonic. Dose, 1 to 5 ♏, or 0.065 to 0.325 c.c.

NOTE.—f ʒ j of this fluid extract is equal to about one grain of *strychnine*.

Extrac'tum o'pii. Extract of opium. Narcotic. Dose, 1 gr., or 0.065 gm. NOTE.—One grain equals about $\frac{1}{5}$ of a grain of morphine.

Extrac'tum parei'ræ flu'idum. Fluid extract of pareira. The root. Diuretic. Dose, 5 to 30 ♏, or 0.325 to 2 c.c.

Extrac'tum physostigma'tis. Extract of Calabar bean. Sedative. Dose, $\frac{1}{4}$ to $\frac{3}{4}$ gr., or 0.016 to 0.048 gm.

Extrac'tum phytolac'cæ ra'dicis flu'idum. Fluid extract of poke root. Laxative. Dose, 5 to 30 ♏, or 0.325 to 2 c.c.

Extrac'tum pilocar'pi flu'idum. Fluid extract of pilocarpus. From the leaves. Sialagogue. Dose, 5 to 30 ♏, or 0.325 to 2 c.c.

Extrac'tum podophyl'li. Extract of podophyllum. From the root. Cathartic. Dose, $\frac{1}{4}$ to 5 grs., or 0.016 to 0.325 gm.

Extrac'tum podophyl'li flu'idum. Fluid extract of podophyllum. Cathartic. Dose, 5 to 30 ♏, or 0.325 to 2 c.c.

Extrac'tum pru'ni virginia'næ flu'idum. Fluid extract of wild cherry bark. Sedative. Dose, 5 ♏ to $\frac{1}{2}$ teaspoonful, or 0.325 to 2 c.c.

Extrac'tum quas'siæ. Extract of quassia wood. Tonic. Dose, 5 to 10 grs., or 0.325 to 0.65 gm.

Extrac'tum quas'siæ flu'idum. Fluid extract of quassia. Tonic. Dose, 5 to 30 ♏, or 0.325 to 2 c.c.

Extrac'tum rham'ni purshia'næ flu'idum. Fluid extract of cascara bark. Tonic; cathartic. Dose, 5 to 30 ♏, or 0.325 to 2 c.c.

Extrac'tum rhe'i. Extract of rhubarb root. Cathartic; astringent.* Dose, 5 to 30 grs., or 0.325 to 2 gm.

Extrac'tum rhe'i flu'idum. Fluid extract of rhubarb root. Cathartic; astringent. Dose, 5 ♏ to $\frac{1}{2}$ ʒ, or 0.325 to 2 c.c.

Extrac'tum rho'is gla'bræ flu'idum. Fluid extract of sumach berries. Astringent. Dose, 5 to 30 ♏, or 0.325 to 2 c.c.

Extrac'tum ro'sæ flu'idum. Fluid extract of rose petals. Vehicle for other medicines.

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* This seems contradictory; but the fact of its being cathartic *first* and *then* astringent renders it exceptionally valuable among cathartics.

Extrac'tum ru'bi flu'idum. Fluid extract of blackberry bark. Astringent. Dose, 5 ♏ to ½ teaspoonful, or 0.325 to 2 c.c.

Extrac'tum ru'micis flu'idum. Fluid extract of yellow dock root. Alterative. Dose, 5 ♏ to f ʒ ss, or 0.325 to 2 c.c.

Extrac'tum sabi'næ flu'idum. Fluid extract of savine leaves. Uterine stimulant. Dose, 1 to 3 ♏, or 0.065 to 0.195 c.c.

Extrac'tum sanguina'riæ flu'idum. Fluid extract of blood-root. Expectorant. Dose, 5 to 30 ♏, or 0.325 to 2 c.c.

Extrac'tum sarsaparil'læ flu'idum. Fluid extract of sarsaparilla root. Alterative. Dose, 5 to 30 ♏, or 0.325 to 2 c.c.

Extrac'tum sarsaparil'læ flu'idum compos'itum. Compound fluid extract of sarsaparilla root. Alterative. Dose, 5 to 30 ♏, or 0.325 to 2 c.c.

Extrac'tum scil'læ flu'idum. Fluid extract of squill bulbs. Expectorant; emetic. Dose, 1 to 3 ♏, or 0.065 to 0.195 c.c.

Extrac'tum scopa'rii flu'idum. Fluid extract of broom tops. Diuretic. Dose, 5 to 30 ♏, or 0.325 to 2 c.c.

Extrac'tum scutella'riæ flu'idum. Fluid extract of skull-cap, the herb. Alterative. Dose, 5 to 30 ♏, or 0.325 to 2 c.c.

Extrac'tum sen'egæ flu'idum. Fluid extract of senega root. Expectorant. Dose, 5 to 30 ♏, or 0.325 to 2 c.c.

Extrac'tum sen'næ flu'idum. Fluid extract of senna leaves. Cathartic. Dose, 5 to 30 ♏, or 0.325 to 2 c.c.

Extrac'tum serpenta'riæ flu'idum. Fluid extract of Virginia snake-root. Tonic. Dose, 5 to 30 ♏, or 0.325 to 2 c.c.

Extrac'tum spige'liæ flu'idum. Fluid extract of pink root. Anthelmintic. Dose, 5 to 30 ♏, or 0.325 to 2 c.c.

Extrac'tum stillin'giæ flu'idum. Fluid extract of queen's root. Alterative. Dose, 5 ♏ to f ʒ ss, or 0.325 to 2 c.c.

Extrac'tum stramo'nii sem'inis. Extract of stramonium seed. Narcotic. Dose, ⅛ to ½ gr., or 0.008 to 0.033 gm.

Extrac'tum stramo'nii sem'inis flu'idum. Fluid extract of stramonium seed. Narcotic. Dose, 1 to 3 ♏, or 0.065 to 0.195 c.c.

Extrac'tum tarax'aci. Extract of dandelion root. Laxative. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Extrac'tum tarax'aci flu'idum. Fluid extract of dandelion. Laxative. Dose, 5 to 30 ♏, or 0.325 to 2 c.c.

Extrac'tum trit'ici flu'idum. Fluid extract of couch-grass. Diuretic. Dose, 5 ♏ to ½ teaspoonful, or 0.325 to 2 c.c.

Extrac'tum u'væ ur'si. Extract of bearberry leaves. Diuretic. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Extrac'tum u'væ ur'si flu'idum. Fluid extract of uva ursi. Diuretic. Dose, 5 to 30 ♏, or 0.325 to 2 c.c.

Extrac'tum valeria'næ flu'idum. Fluid extract of valerian root. Nerve stimulant. Dose, 5 to 30 ♏, or 0.325 to 2 c.c.

Extrac'tum vera'tri vi'ridis flu'idum. Fluid extract of American hellebore root. Cardiac sedative. Dose, ½ to 2 ♏, or 0.033 to 0.13 c.c.

Extrac'tum vibur'ni op'uli flu'idum. Fluid extract of cramp bark. Stimulant. Dose, 5 to 30 ♏, or 0.325 to 2 c.c.

Extrac'tum vibur'ni pru'nifo'lii flu'idum. Fluid extract of black haw bark. Uterine stimulant. Dose, 5 to 30 ♏, or 0.325 to 2 c.c.

Extrac'tum xanthox'yli flu'idum. Fluid extract of prickly ash bark. Stimulant. Dose, 5 to 30 ♏, or 0.325 to 2 c.c.

Extrac'tum zingib'eris flu'idum. Fluid extract of ginger root. Stimulant. Dose, 5 to 30 ♏, or 0.325 to 2 c.c.

F.

Fel bo'vis. Ox-gall.

Fel bo'vis purifica'tum. Purified ox-gall. Laxative. Dose, 5 to 30 grs., or 0.325 to 2 c.c.

Fer'ri car'bonas sacchara'tus. Sugared iron carbonate. Hematic. Dose, 1 to 10 grs., or 0.065 to 0.65 gm.

Fer'ri chlo'ridum. Iron chlorid. Used in the form of tincture.

Fer'ri ci'tras. Iron citrate. Hematic. Dose, 1 to 10 grs., or 0.065 to 0.65 gm.

Fer'ri et ammo'nii ci'tras. Iron and ammonium citrate. Hematic. Dose, 1 to 10 grs., or 0.065 to 0.65 gm.

Fer'ri et ammo'nii sul'phas. Iron and ammonium sulphate. Astringent washes.

Fer'ri et ammo'nii tar'tras. Iron and ammonium tartrate. Hematic. Dose, 1 to 10 grs., or 0.065 to 0.65 gm.

Fer'ri et potas'sii tar'tras. Iron and potassium tartrate. Hematic. Dose, 1 to 10 grs., or 0.065 to 0.65 gm.

Fer'ri et quini'næ ci'tras. Iron and quinine citrate. Hematic; antipyretic. Dose, 1 to 10 grs., or 0.065 to 0.65 gm.

Fer'ri et quini'næ ci'tras solu'bilis. Soluble iron and quinine citrate. Hematic; antipyretic. Dose, 1 to 10 grs., or 0.065 to 0.65 gm.

Fer'ri et strychni'næ ci'tras. Iron and strychnine citrate. Tonic; stimulant. Dose, 1 to 5 grs., or 0.065 to 0.325 gm.

NOTE.—This salt contains one per cent. of strychnine citrate, or $\frac{1}{100}$ of a grain in each grain of the salt. Five grains is the maximum dose, and contains $\frac{5}{100}$ or $\frac{1}{20}$ of a grain of strychnine citrate.

The following is an illustration of an unsafe if not poisonous dose. It is given as an illustration also of the necessity of asking the doctor, *whenever there is doubt*, for large doses are sometimes given. This is a task which is often unpleasant, but should *always* be fearlessly done:

℞. Sodium bromid, ... ℥j
Iron and strychnine citrate, ... ℥iv
Water,
Syrup of hypophosphites (U. S. P.), āā q. s. ad, . f℥iv.
SIG.—One teaspoonful three times a day, a. c.

Each teaspoonful contains about eight grains of the salt or $\frac{1}{12}$ of a grain of strychnine.

Fer'ri hypophos'phis. Iron hypophosphite. Tonic in lung troubles. Dose, 1 to 10 grs., or 0.065 to 0.65 gm.

Fer'ri iod'idum saccha'rum. Sugared iron iodid.* Hematic; alterative. Dose, 1 to 10 grs., or 0.065 to 0.65 gm.

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* Sugar is added to iron preparations for its preserving effect. It prevents chemic change.

Fer'ri lac'tas. Iron lactate. Hematic. Dose, 1 to 10 grs., or 0.065 to 0.65 gm.

Fer'ri ox'idum hydra'tum. Hydrated oxid of iron. Antidote in arsenical poisoning. Dose, f℥iv and more, or 120 c.c.

Fer'ri ox'idum hydra'tum cum magne'sia. Hydrated oxid of iron with magnesia. Arsenical antidote, more quickly prepared than the one first given. Dose, f℥iv and more, or 120 c.c.

Fer'ri phos'phas solu'bilis. Soluble iron phosphate. Hematic and nerve tonic. Dose, 1 to 10 grs., or 0.065 to 0.65 gm.

Fer'ri pyrophos'phas solu'bilis. Soluble iron pyrophosphate. Hematic. Dose, 1 to 10 grs., or 0.065 to 0.65 gm.

Fer'ri sul'phas. Iron sulphate. Hematic. Dose, 1 to 10 grs., or 0.065 to 0.65 gm. Also in solution as a disinfectant.

Fer'ri sul'phas exsicca'tus. Dried iron sulphate. Hematic. Dose, 1 to 10 grs., or 0.065 to 0.65 gm.

Fer'ri sul'phas granula'tus. Granulated iron sulphate. Hematic. Dose, 1 to 10 grs., or 0.065 to 0.65 gm.

Fer'ri valeria'nas. Iron valerianate. Hematic; nerve stimulant. Dose, 1 to 10 grs., or 0.065 to 0.65 gm.

Fer'rum. Iron. Hematic. Dose, 1 to 10 grs., or 0.065 to 0.65 gm.

Fer'rum reduc'tum. Reduced iron or iron by hydrogen. Hematic. Dose, 1 to 10 grs., or 0.065 to 0.65 gm.

NOTE.—This is sometimes called Quevenne's iron, and is the only form of *metallic* iron suitable for internal administration.

Quevenne's iron is made in France and comes in sealed packages, and this sort should be used.

Fi'cus. Fig. Laxative. Used in confections.

Fœnic'ulum. Fennel seed. Carminative. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Frangu'la. Buckthorn bark. Cathartic. Dose, 5 to 30 grs., or 0.325 to 2 gm.

G.

Gal'la. Nutgall. Astringent. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Gelsem'ium. Yellow jasmine root. Antispasmodic. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Gentia'na. Gentian root. Bitter tonic. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Gera'nium. Crane's-bill—the root. Astringent. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Glyceri'num. Glycerin. Vehicle for other medicines.

Glyceri'tum ac'idi carbol'ici. Glycerite of carbolic acid. Antiseptic application.

Glyceri'tum ac'idi tan'nici. Glycerite of tannic acid. Astringent application.

Glyceri'tum am'yli. Glycerite of starch. Emollient application.

Glyceri'tum boroglyceri'ni. Glycerite of boroglycerin. Antiseptic application.

Glyceri'tum hydras'tis. Glycerite of hydrastis. Astringent and antiseptic application.

Glyceri'tum vitel'li. Glycerite of yolk of egg. Used for emulsifying oils.

Glycyrrhi'za. Licorice root. Expectorant. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Glycyrrhizi'num ammonia'tum. Ammoniated glycyrrhizin. The sweet principle from licorice root. Used for flavoring purposes.

Gossyp'ii ra'dicis cor'tex. Cotton-root bark. Emmenagogue. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Gossyp'ium purifica'tum. Purified cotton. For surgical dressings.

Grana'tum. Pomegranate bark. Astringent. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Grinde'lia. Grindelia leaves. Antispasmodic. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Guaia'ci lig'num. Guaiacum wood. Alterative. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Guaia'ci resi'na. Resin of guaiacum. Alterative; stimulant. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Guara'na. Guarana—the crushed seeds. Stimulant. Dose, 5 to 30 grs., or 0.325 to 2 gm.

H.

Hæmatox'ylon. Logwood. Astringent. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Hamame'lis. Witch-hazel leaves. Astringent. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Hedeo'ma. Pennyroyal leaves. Stimulant. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Hydrar'gyri chlo'ridum corro'sivum. Corrosive mercuric chlorid. Corrosive chlorid of mercury. Corrosive sublimate. Bichlorid of mercury. Perchlorid of mercury. Alterative. Dose, $\frac{1}{32}$ to $\frac{1}{8}$ of a gr., or 0.002 to 0.008 gm.

Hydrar'gyri chlo'ridum mi'te.* Mild mercurous chlorid. Mild chlorid of mercury. Calomel. Subchlorid of mercury. Cholagogue. Dose, 1 to 10 grs., or 0.065 to 0.65 gm.

Hydrar'gyri cyan'idum. Cyanid of mercury. Alterative; sedative. Dose, $\frac{1}{24}$ to $\frac{1}{8}$ of a gr., or 0.003 to 0.008 gm.

Hydrar'gyri iod'idum fla'vum. Yellow iodid of mercury. Alterative. Dose, $\frac{1}{2}$ to 3 grs., or 0.033 to 0.195 gm.

Hydrar'gyri iod'idum ru'brum. Red iodid of mercury. Alterative. Dose, $\frac{1}{16}$ to $\frac{1}{4}$ of a gr., or 0.004 to 0.016 gm.

Hydrar'gyri ox'idum fla'vum. Yellow oxid of mercury. Stimulant. External use.

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*Under the heading Mercury Salts, it has been advised that only the common names corrosive sublimate and calomel be used. See text.

Hydrar′gyri ox′idum ru′brum. Red oxid of mercury. Red precipitate. Stimulant. External use.

Hydrar′gyri subsul′phas fla′vus. Turpeth mineral. Yellow subsulphate of mercury. Alterative. Dose, 2 to 4 grs., or 0.13 to 0.26 gm.

Hydrar′gyrum. Mercury. Quicksilver. Alterative. Dose, 1 to 3 grs., or 0.065 to 0.195 gm.

Hydrar′gyrum ammonia′tum. Ammoniated mercury. White precipitate. Stimulant; alterative. External use.

Hydrar′gyrum cum cre′ta. Mercury with chalk. Gray powder. Alterative. Dose, 1 to 10 grs., or 0.065 to 0.65 gm.

Hydrastini′næ hydrochlo′ras. Hydrastinine hydrochlorate. Oxytocic. Dose, ½ to 1 gr., or 0.033 to 0.065 gm.

Hydras′tis. Golden seal—root. Tonic; cathartic. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Hyosci′næ hydrobro′mas. Hyoscine hydrobromate. Alkaloid from hyoscyamus. Sedative; narcotic. Dose, $\frac{1}{100}$ to $\frac{1}{60}$ of a gr., or 0.0006 * to 0.001 gm.

Hyoscyami′næ hydrobro′mas. Hyoscyamine hydrobromate. Alkaloid from hyoscyamus. Narcotic. Dose, $\frac{1}{60}$ of a gr., or 0.001 gm.

Hyoscyami′næ sul′phas. Hyoscyamine sulphate. Narcotic. Dose $\frac{1}{60}$ of a gr., or 0.001 gm.

Hyoscy′amus. Hyoscyamus, or henbane leaves. Narcotic. Dose, 1 to 3 grs., or 0.065 to 0.195 gm.

I.

Ichthyocol′la. Isinglass. Fish gelatin. Used in the preparation of jellies.

Illi′cium. Star anise seed. Carminative. Dose, 5 to 30 grs., or 0.325 to 2 gm.

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* There are no names for the fractional parts of a milligram; 0.0006 is read $\frac{6}{10}$ of a milligram.

Infu'sa. Infusions. Whenever an infusion is ordered, and the strength not given, use one ounce of herb to a pint of water. See in the text, under title of Infusions.

Infu'sum cincho'næ. Infusion of Peruvian bark. Tonic; antipyretic. Dose, f℥j to f℥ij, or 30 to 60 c.c.

Infu'sum digita'lis. Infusion of digitalis, or foxglove. Stimulant. Dose, f℥ss to f℥ij, or 2 to 8 c.c. One fluidounce of this infusion equals about 1 gr. of the drug.

Infu'sum pru'ni virginia'næ. Infusion of wild cherry bark. Sedative. Dose, f℥j to f℥ij, or 30 to 60 c.c.

Infu'sum sen'næ compos'itum. Compound infusion of senna. Black draught. Cathartic. Dose, f℥iv to f℥ij, or 16 to 60 c.c.

In'ula. Elecampane—the root. Stimulant; alterative. Dose, 5 to 30 grs. or 0.325 to 2 gm.

Iodofor'mum. Iodoform. Used in antiseptic dressings.

Io'dum. Iodine. Used externally as an alterative.

Ipecacuan'ha. Ipecac—the root. Emetic. Dose, 10 to 30 grs., or 0.650 to 2 gm. Expectorant. Dose, 1 to 3 grs., or 0.065 to .195 gm.

I'ris. Blue flag—the root. Cathartic. Dose, 5 to 30 grs., or 0.325 to 2 gm.

J.

Jala'pa. Jalap—the root. Cathartic. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Jug'lans. Butternut bark. Laxative. Dose, 5 to 30 grs., or 0.325 to 2 gm.

K.

Kama'la. Kamala. Anthelmintic; tenicide. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Ki'no. Kino; juice from the wood. Astringent. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Krame'ria. Rhatany—the root. Astringent. Dose, 5 to 30 grs., or 0.325 to 2 gm.

L.

Lactuca'rium. Lactucarium. The dried juice. Anodyne. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Lap'pa. Burdock root. Laxative. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Leptan'dra. Culver's root. Cathartic. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Limo'nis cor'tex. Lemon peel. Used as a flavor.

Limo'nis suc'cus. Lemon juice. Refrigerant. Dose, the juice of one or more lemons.

Linimen'tum ammo'niæ. Ammonia liniment. Stimulant. External use.

Linimen'tum belladon'næ. Belladonna liniment. Anodyne. External use.

Linimen'tum cal'cis. Lime liniment. Carron oil.

NOTE.—In view of the sudden need for this preparation in burn cases, this is the formula: Lime water, raw linseed oil, equal parts.

Linimen'tum campho'ræ. Camphor liniment. Anodyne. External use.

Linimen'tum chlorofor'mi. Chloroform liniment. Anodyne.

Linimen'tum sapo'nis. Soap liniment. Stimulant; alterative.

Linimen'tum sapo'nis mol'lis. Soft soap liniment. Stimulant; emollient; detergent.

Linimen'tum sina'pis compos'itum. Compound mustard liniment. Rubefacient.

Linimen'tum terebin'thinæ. Turpentine liniment. Stimulant.

Li'num. Linseed. Flax-seed. Demulcent in form of infusion. Used in the ground state, as flax-seed meal in poultices.

Li'quor ac'idi arseno'si. Solution of arsenous acid. Alterative. Dose, 1 to 5 ♏, or 0.065 to 0.325 c.c. 1 ♏ = $\frac{1}{100}$ of a gr. of the acid.

Liquor ammo'nii aceta'tis. Solution of ammonium acetate. Spirit of mindererus. Diaphoretic. Dose, f ʒ j to f ℥ j, or 4 to 30 c.c.

Li'quor ar'seni et hydrar'gyri iod'idi. Solution of arsenic and mercuric iodide. Donovan's solution. Alterative. Dose, 1 to 5 ♏, or 0.065 to 0.325 c.c.

Li'quor cal'cis. Lime water. Antacid. Dose, f ʒ j to f ℥ ij, or 4 to 60 c.c.

Li'quor fer'ri aceta'tis. Solution of iron acetate. Tonic. Dose, 1 to 10 ♏, or 0.065 to 0.65 c.c.

Li'quor fer'ri chlo'ridi. Solution of iron chloride. Tonic. Dose, 1 to 10 ♏, or 0.065 to 0.65 c.c.

Li'quor fer'ri citra'tis. Solution of iron citrate. Tonic. Dose, 1 to 10 ♏, or 0.065 to 0.65 c.c.

Li'quor fer'ri et ammo'nii aceta'tis. Solution of iron and ammonium acetate. Basham's mixture. Diuretic. Dose, f ʒ j to f ʒ viij or 4 to 30 c.c.

Li'quor fer'ri nitra'tis. Solution of iron nitrate.

Li'quor fer'ri subsulpha'tis. Solution of iron subsulphate. Monsel's solution. Styptic. Dose, 2 to 10 ♏, or 0.13 to 0.65 c.c.

Li'quor fer'ri tersulpha'tis. Solution of iron sulphate. Tonic. Dose, 1 to 5 ♏, or 0.065 to 0.65 c.c.

Li'quor hydrar'gyri nitra'tis. Solution of mercuric nitrate.

Li'quor Io'di compos'itus. Compound solution of iodine. Lugol's solution. Alterative. Dose, 1 to 10 ♏, or 0.065 to 0.65 c.c.

Li'quor magne'sii citra'tis. Solution of magnesium citrate. Cathartic. Dose, f ʒ j to f ℥ xij, or 30 to 360 c.c.

Li'quor plum'bi subaceta'tis. Solution of subacetate of lead. Used externally.

Li'quor plum'bi subaceta'tis dilu'tus. Diluted solution of lead subacetate. Astringent. External use.

Li′quor potas′sæ. Solution of potassa. Antacid; diuretic. Dose, 5 to 30 ♏, or 0.325 to 2 c.c.

Li′quor potas′sii arseni′tis. Solution of potassium arsenite. Fowler's solution. Alterative. Dose, 1 to 10 ♏, or 0.065 to 0.65 c.c. 1 ♏ = $\frac{1}{100}$ of a grain of potassium arsenite.

Li′quor potas′sii citra′tis. Solution of potassium citrate. Diuretic. Dose, f℥j to f℥j, or 4 to 30 c.c.

Li′quor so′dæ. Solution of soda. Seldom used uncombined.

Li′quor so′dæ chlora′tæ. Solution of chlorinated soda. Labarraque's solution. Disinfectant.

Li′quor so′dii arsena′tis. Solution of sodium arsenate. Alterative. Dose, 1 to 10 ♏, or 0.065 to 0.65 c.c.

Li′quor so′dii silica′tis. Solution of sodium silicate. Used in surgery mechanically.

Li′quor zinci chlo′ridi. Solution of zinc chloride. Deodorizer and disinfectant.

Lith′ii ben′zoas. Lithium benzoate. Diuretic. Dose, 10 to 30 grs., or 0.65 to 2 gm.

Lith′ii bro′midum. Lithium bromide. Hypnotic. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Lith′ii car′bonas. Lithium carbonate. Antacid. Dose, 5 to 15 grs., or 0.325 to 1 gm.

Lith′ii ci′tras. Lithium citrate. Antacid. Dose, 10 to 30 grs., or 0.65 to 2 gm.

Lith′ii ci′tras efferves′cens. Effervescent lithium citrate. Antacid. Dose, ℥j to ℥ij, or 4 to 8 gm.

Lith′ii salicyl′as. Lithium salicylate. Antirheumatic. Dose, 10 to 30 grs., or 0.65 to 2 gm.

Lobe′lia. Lobelia leaves. Emetic. Dose, 1 to 3 grs., or 0.065 to 0.195 gm.

Lupuli′num. Lupulin. A powder from the hop flower. Hypnotic. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Lycopo'dium. Lycopodium. A vegetable powder. Used externally as an absorbent.

M.

Ma'cis. Mace. The envelope of the nutmeg. Carminative; sedative. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Magne'sia. Calcined magnesia. Cathartic. Dose, 5 to 60 grs., or 0.325 to 4 gm.

Magne'sia pondero'sa. Heavy calcined magnesia. Cathartic. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Magne'sii car'bonas. Magnesium carbonate. Antacid. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Magne'sii ci'tras efferves'cens. Effervescent magnesium citrate. Magnesium citrate mechanically wrought into granular form. Cathartic. Dose, ʒj to ℥j, or 4 to 30 gm.

Magne'sii sul'phas. Magnesium sulphate. Epsom salt. From magnesium carbonate by sulphuric acid. Cathartic. Dose, ʒj to ʒviij, or 4 to 30 gm.

Manga'ni diox'idum. Manganese dioxide or binoxide or black oxide. Tonic. Dose, 1 to 10 grs., or 0.065 to 0.65 gm.

Manga'ni sul'phas. Manganese sulphate. Hepatic stimulant. Dose, 1 to 10 grs., or 0.065 to 0.65 gm.

Man'na. Manna. A sugary vegetable excretion. Cathartic. Dose, ʒj to ℥j, or 4 to 30 gm.

Marru'bium. Horehound leaves. Tonic. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Mas'sa copai'bæ. Mass of copaiba. A mixture of copaiba and magnesia.

Mas'sa fer'ri carbona'tis. Mass of iron carbonate. Tonic. Dose, 1 to 10 grs., or 0.065 to 0.65 gm.*

* Massæ, masses. Mass is the name given to drugs which have been formed into a plastic mass in readiness for division into pill form.

Mas'sa hydrar'gyri. Blue mass. Alterative. Dose, 1 to 10 grs., or 0.065 to 0.65 gm.

Mas'tiche. Mastic, a gum. Alterative stimulant. Dose, 1 to 5 grs., or 0.065 to 0.325 gm.

Mat'ico. Matico leaves. Tonic. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Matrica'ria. German chamomile flowers. Tonic. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Mel. Honey. Used as a vehicle.

Mel despuma'tum. Clarified honey. Used as a vehicle.

Mel ro'sæ. Honey of rose. From rose petals and honey. Used as a vehicle.

Melis'sa. Balm-leaves. Diaphoretic. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Menisper'mum. Canadian moonseed. Alterative. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Men'tha piperi'ta. Peppermint leaves. Carminative. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Men'tha vir'idis. Spearmint leaves. Carminative. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Men'thol. Menthol. A crystalline substance from oil of peppermint. Chief use as a local anesthetic.

Me'thyl salicy'las. Methyl salicylate. Artificial oil of wintergreen. Alterative in rheumatic affections. Dose, 1 to 5 ♏, or 0.065 to 0.325 c.c.

Meze'reum. Mezereum bark. Stimulant. Dose, 5 to 30 grs., or 0.325 to 2 gm. Also externally as a vesicant.

Mistu'ra cre'tæ. Chalk mixture. Chalk, gum Arabic, sugar, cinnamon water. Astringent. Dose, f℥j to f℥iv, or 4 to 15 c.c.

Mistu'ra fer'ri compo'sita. Compound iron mixture. Iron, myrrh, spirit of lavender, and rose water. Tonic. Dose, f℥j to f℥iv, or 4 to 15 c.c.

Mistu'ra glycyrrhi'zæ compos'ita. Compound licorice mixture. Paregoric, wine of antimony, spirit of niter, sugar, licorice, water. Expectorant. Dose, f℥j to f℥iv, or 4 to 15 c.c. Each tablespoonful or f℥ss or 15 c.c. contains ⅛ of a grain of opium.

Mistu'ra rhe'i et so'dæ. Mixture of rhubarb and soda. Rhubarb, ipecac, essence of peppermint, glycerin, sodium bicarbonate. Stomachic; carminative. Dose, f℥j to f℥iv, or 4 to 15 c.c.

Morphi'na. Morphine. Alkaloid from opium. Narcotic; anodyne. Dose, $\frac{1}{16}$ to ¼ gr., or 0.004 to 0.016 gm.

Morphi'næ ac'etas. Morphine acetate. From morphine by acetic acid. Anodyne. Dose, $\frac{1}{16}$ to ¼ gr., or 0.004 to 0.016 gm.

Morphi'næ hydrochlo'ras. Morphine hydrochlorate. From morphine by hydrochloric acid. Anodyne. Dose, $\frac{1}{16}$ to ¼ gr., or 0.004 to 0.016 gm.

Morphi'næ sul'phas. Morphine sulphate. From morphine by sulphuric acid. Anodyne. Dose, $\frac{1}{16}$ to ¼ gr., or 0.004 to 0.016 gm.

Mos'chus. Musk. A secretion from the musk deer. Antispasmodic. Dose, 1 to 10 grs., or 0.065 to 0.65 gm.

Mucila'go aca'ciæ. Mucilage of gum Arabic. Demulcent drink.

Mucila'go sas'safras medul'læ. Mucilage of sassafras pith. Domestic medicine as an eye-wash.

Mucila'go tragacan'thæ. Mucilage of tragacanth.

Mucila'go ul'mi. Mucilage of elm bark. Demulcent drink.

Myris'tica. Nutmeg—the seed. Sedative; carminative. Dose, 5 to 30 grs., or 0.325 to 2 c.c.

Myr'rha. Myrrh—the gum. Stimulant. Dose, 5 to 30 grs., or 0.325 to 2 c.c.

N.

Naphtali'num. Naphtalene. One of the coal-tar products. Antiseptic. Dose, 1 to 10 grs., or 0.065 to 0.65 gm.

Naph′tol. Beta-naphtol. One of the coal-tar products. Antiseptic. Dose, 1 to 10 grs., or 0.065 to 0.65 gm.

Nux vom′ica. Nux vomica; seed. Tonic. Dose, 1 to 3 grs., or 0.065 to 0.195 gm.

O.

Olea′tum hydrar′gyri. Oleate of mercury. From oxid of mercury by oleic acid. Alterative; stimulant. For external use.

Olea′tum veratri′næ.* Oleate of veratrine. From veratrine and oleic acid. Irritant. External use.

Olea′tum zin′ci. Oleate of zinc. From zinc oxid and oleic acid. Absorbent. External use.

Oleoresi′na aspid′ii. Oleoresin of male fern. Prepared from the root. Tenicide. Dose, f℥ss to f℥j, or 2 to 4 c.c.

Oleoresi′na cap′sici. Oleoresin of capsicum. Prepared from the fruit. Stimulant. Dose, ¼ to 1 ♏, or 0.016 to 0.065 c.c.

Oleoresi′na cube′bæ. Oleoresin of cubeb. Prepared from the berry. Diuretic. Dose, 5 to 30 ♏, or 0.325 to 2 c.c.

Oleoresi′na lupuli′ni. Oleoresin of lupulin. Prepared from the powder. Hypnotic. Dose, 1 to 10 ♏, or 0.065 to 0.65 c.c.

Oleoresi′na pi′peris. Oleoresin of black pepper. Prepared from the berries. Stimulant. Dose, ¼ to 2 ♏, or 0.016 to 0.130 c.c.

Oleoresi′na zingibe′ris. Oleoresin of ginger. Stimulant. Dose, ½ to 2 ♏, or 0.033 to 0.130 c.c.

O′leum ad′ipis. Lard oil. Expressed from cold lard.

O′leum æthe′reum. Ethereal oil. From alcohol by sulphuric acid.

O′leum amyg′dalæ ama′ræ.† Oil of bitter almond.

O′leum amyg′dalæ expres′sum. Expressed oil of almonds. Laxative. Dose, f℥j to f℥iv, or 4 to 16 c.c.

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* Veratrine is an alkaloid obtained from a seed called sabadilla seed.

† Unless otherwise expressed, these volatile oils are used as flavors.

O'leum ani'si. Oil of anise. Carminative. Dose, 1 to 5 ♏, or 0.065 to 0.325 c.c.

O'leum auran'tii cor'ticis. Oil of orange peel.

O'leum auran'tii flo'rum. Oil of orange flowers.

O'leum bergamot'tæ. Oil of bergamot.

O'leum betu'læ volat'ile. Volatile oil of betula. Substitute for oil of wintergreen. Alterative. Dose, 1 to 5 ♏, or 0.065 to 0.325 c.c.

O'leum cadi'num. Oil of cade. Stimulant. External use.

O'leum cajupu'ti. Oil of cajuput. Stimulant. External use.

O'leum ca'ri. Oil of caraway seed. Carminative. Dose, 1 to 5 ♏, or 0.065 to 0.325 c.c.

O'leum caryophyl'li. Oil of cloves. Stimulant. Dose, 1 to 5 ♏, or 0.065 to 0.325 c.c.

O'leum chenopo'dii. Oil of American wormseed. Anthelmintic. Dose, 3 to 10 ♏, or 0.195 to 0.65 c.c.

O'leum cinnamo'mi. Oil of cinnamon. Stimulant. Dose, 1 to 10 ♏, or 0.065 to 0.65 c.c.

O'leum copai'bæ. Oil of copaiba. Stimulant. Dose, 1 to 10 ♏, or 0.065 to 0.65 c.c.

O'leum corian'dri. Oil of coriander seed. Stimulant. Dose, 1 to 5 ♏, or 0.065 to 0.325 c.c.

O'leum cube'bæ. Oil of cubeb berries. Stimulant. Dose, 1 to 5 ♏, or 0.065 to 0.325 c.c.

O'leum erigeron'tis. Oil of fleabane. Stimulant. Dose, 1 to 5 ♏, or 0.065 to 0.325 c.c.

O'leum eucalyp'ti. Oil of eucalyptus. Expectorant. Dose, 1 to 10 ♏, or 0.065 to 0.65 c.c.

O'leum fœnic'uli. Oil of fennel seed. Carminative. Dose, 1 to 5 ♏, or 0.065 to 0.325 c.c.

O'leum gaulthe'riæ. Oil of wintergreen. Alterative. Dose, 5 to 30 ♏, or 0.325 to 2 c.c.

O'leum gossyp'ii sem'inis. Oil of cotton seed. For external use.

O'leum hedeo'mæ. Oil of pennyroyal. Stimulant. Dose, 1 to 5 ♏, or 0.065 to 0.325 c.c.

O'leum junip'eri. Oil of juniper berries. Diuretic. Dose, 1 to 10 ♏, or 0.065 to 0.65 c.c.

O'leum lavandulæ florum. Oil of lavender flowers. Stimulant. External use.

O'leum limo'nis. Oil of lemon peel.

O'leum li'ni. Oil of linseed or flaxseed. External use.

O'leum men'thæ piperi'tæ. Oil of peppermint leaves. Carminative. Dose, 1 to 5 ♏, or 0.065 to 0.325 c.c.

O'leum men'thæ vir'idis. Oil of spearmint leaves. Carminative. Dose, 1 to 5 ♏, or 0.065 to 0.325 c.c.

O'leum morrhu'æ. Cod-liver oil. Tonic. Dose, f℥j to f℥iv, or 4 to 16 c.c.

O'leum myr'ciæ. Oil of bay leaves. Stimulant. External use.

O'leum myris'ticæ. Oil of nutmeg. Sedative. Dose, 1 to 5 ♏, or 0.065 to 0.325 c.c.

O'leum ol'ivæ. Olive oil. Laxative. Dose, f℥j to f℥iv, or 4 to 16 c.c.

O'leum phosphora'tum. Phosphorized oil. Tonic. Dose, 1 to 5 ♏, or 0.065 to 0.325 c.c. One minim contains $\frac{1}{100}$ of a gr. of phosphorus.

O'leum pi'cis liq'uidæ. Oil of tar. Stimulant. External use.

O'leum pimen'tæ. Oil of allspice berry. Carminative. Dose, 1 to 5 ♏, or 0.065 to 0.325 c.c.

O'leum ric'ini. Castor oil. Cathartic. Dose, f℥j to f℥j, or 4 to 30 c.c.

O'leum ro'sæ. Oil of rose petals.

O'leum rosmari'ni. Oil of rosemary leaves. Stimulant. External use.

O'leum sabi'næ. Oil of savine. Uterine stimulant. Dose, 1 to 5 ♏, or 0.065 to 0.325 c.c.

O'leum santa'li. Oil of sandalwood. Stimulant. Dose, 10 to 30 ♏, or 0.65 to 2 c.c.

O'leum sas'safras. Oil of sassafras bark. Stimulant. Dose, 1 to 5 ♏, or 0.065 to 0.325 c.c.

O'leum ses'ami. Teel oil. Benné oil. Laxative. Dose, f ʒ j to f ʒ iv, or 4 to 16 c.c.

O'leum sina'pis volat'ile. Volatile oil of mustard. Rubefacient. External use.

O'leum terebin'thinæ. Oil of turpentine. Stimulant. Dose, 5 to 30 ♏, or 0.325 to 2 c.c.

O'leum terebin'thinæ rectifica'tum. Rectified oil of turpentine.

O'leum theobroma'tis. Cacao butter. Used for making suppositories.

O'leum thy'mi. Oil of thyme. Stimulant. Dose, 1 to 5 ♏, or 0.065 to 0.325 c.c.

O'leum tig'lii. Croton oil. Violent cathartic. Poison. Dose, ½ to 2 ♏, or 0.033 to 0.13 c.c.

O'pii pul'vis. Powdered opium containing 14 per cent. of morphine—about ⅛ of a grain of morphine to each grain of opium. Narcotic. Dose, ½ to 2 grs., or 0.033 to 0.13 gm.

O'pium. Gum opium. The concrete milk-juice from the Eastern poppy; varying in the amount of alkaloid present. Narcotic. Dose, ½ to 2 grs., or 0.033 to 0.13 gm.

O'pium deodora'tum. Deodorized opium. Opium from which the narcotine has been removed. It is less nauseating than native opium. Narcotic. Dose, ½ to 2 grs., or 0.033 to 0.13 gm.

P.

Pancreati'num. Pancreatin. A digestive ferment from the pancreas of the calf.

Paraldehy'dum. Paraldehyd. A product of the decomposition of alcohol. Hypnotic. Dose, 1 to 3 ♏, or 0.065 to 0.195 c.c.

Parei'ra. Pareira brava—root. Diuretic. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Pe'po. Pumpkin seed. Tenicide. Dose, ½ to 2 oz., or 15 to 60 gm.

Pepsi'num. Pepsin. A digestive ferment from the stomach of the hog. Dose, 1 to 10 grs., or 0.065 to 0.65 gm.

Pepsi'num sacchara'tum. Saccharated pepsin. One part pepsin, ten parts sugar of milk.

Petrola'tum liq'uidum. Liquid petrolatum. Distilled from petroleum.

Petrola'tum mol'le. Soft petrolatum. Distilled from petroleum.

Petrola'tum spis'sum. Hard petrolatum. Distilled from petroleum. These are used as ointments, other substances being added to them for medication. Vaselin is similar to petroleum; so is cosmoline.

Phos'phorus. Phosphorus. Obtained from bones. Stimulant. Dose, $\frac{1}{60}$ of a gr., or 0.001 gm.

Physostig'ma. Calabar bean. Sedative. Dose, ½ to 2 grs., or 0.033 to 0.13 gm.

Physostigmi'næ salicy'las. Physostigmine salicylate. Sedative. Dose, $\frac{1}{100}$ of a gr., or 0.0005 gm.

Physostigmi'næ sul'phas. Physostigmine sulphate. Sedative. Dose, $\frac{1}{100}$ of a gr., or 0.0005 gm.

Phytolac'cæ fruc'tus. Poke berries. Laxative. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Phytolac'cæ ra'dix. Poke root. Laxative. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Picrotox'inum. Picrotoxin. Active principle of fish berry. Tonic; antispasmodic. Dose, $\frac{1}{60}$ of a gr., or 0.001 gm.

Pilocarpi'næ hydrochlo'ras. Pilocarpine hydrochlorate. Diaphoretic. Dose, $\frac{1}{10}$ of a gr., or 0.006 gm.

Pilocar'pus. Jaborandi leaves. Diaphoretic. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Pil'ulæ al'oes. Pills of aloes. Cathartic. Dose, 1 to 5 pills (2 grs. each).

Pil'ulæ al'oes et asafœ'tidæ. Pills of aloes and asafetida. Cathartic; anodyne. Dose, 1 to 5 pills.

Pil'ulæ al'oes et fer'ri. Pills of aloes and iron. Tonic; cathartic. Dose, 1 to 3 pills.

Pil'ulæ al'oes et mas'tiches. Pills of aloes and mastic. Laxative. Dose, 1 to 5 pills.

Pil'ulæ al'oes et myr'rhæ. Pills of aloes and myrrh. Stimulant; cathartic. Dose, 1 to 5 pills.

Pil'ulæ antimo'nii compos'itæ. Compound pills of antimony. Alterative. Dose, 1 to 3 pills.

Pil'ulæ asafœ'tidæ. Pills of asafetida. Sedative. Dose, 1 to 5 pills.

Pil'ulæ cathar'ticæ compos'itæ. Compound cathartic pills. Calomel, gamboge, colocynth, and jalap. Cathartic. Dose, 1 to 5 pills.

Pil'ulæ cathar'ticæ vegetab'iles. Vegetable cathartic pills. Cathartic. Dose, 1 to 5 pills.

Pil'ulæ fer'ri carbona'tis. *Blaud's* pills. Pills of iron carbonate. Tonic. Dose, 1 to 5 pills.

Pil'ulæ fer'ri iod'idi. Pills of iron iodide. Tonic; alterative. Dose, 1 to 3 pills.

Pil'ulæ o'pii. Pills of opium (1 gr). Narcotic. Dose, 1 or 2 pills.

Pil'ulæ phos'phori. Pills of phosphorus ($\frac{1}{100}$ of a gr.). Tonic. Dose, 1 or 2 pills.

Pil'ulæ rhe'i. Pills of rhubarb. Cathartic; astringent. Dose, 1 to 5 pills.

Pil'ulæ rhe'i compos'itæ. Compound rhubarb pills. Cathartic. Dose, 1 to 5 pills.

Pimen'ta. Allspice fruit. Carminative. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Pi'per. Black pepper fruit. Stimulant. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Piperi'num. Piperin. Active principle from pepper. Stimulant. Dose, 1 to 10 grs., or 0.065 to 0.65 gm.

Pix burgun'dica. Burgundy pitch. A resinous exudation. Stimulant. External use as a plaster.

Pix liq'uida. Tar. An oleoresin from pine wood. Stimulant. Used in the form of syrup of tar.

Plum'bi ac'etas. Lead acetate. Sugar of lead. From lead by acetic acid. Astringent; sedative. Dose, ½ to 3 grs., or 0.033 to 0.195 gm.

Plum'bi car'bonas. Lead carbonate. From lead by carbonic acid gas. Used externally.

Plum'bi iod'idum. Lead iodide. From lead nitrate and potassium iodid. When given internally—dose, ½ to 3 grs., or 0.033 to 0.195 gm.

Plum'bi ni'tras. Lead nitrate. Used for preparing the iodide.

Plum'bi ox'idum. Lead oxide. Used for preparing lead plaster.

Podophyl'lum. Podophyllum or May apple—root. Cathartic. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Potas'sa. Caustic potash. Potassium hydrate. Made from potassium carbonate and lime. Used as a caustic.

Potas'sa cum cal'ce. Potash with lime. By mixing lime and potash together in powder. Used as a caustic.

Potas'sa sulphura'ta. Sulphurated potash. By heating sulphur and potassium carbonate. Alterative. Dose, 1 to 5 grs., or 0.065 to 0.325 gm.

Potas'sii ace'tas. Potassium acetate. By the action of acetic acid upon potassium carbonate. Diuretic. Dose, 5 to 20 grs., or 0.325 to 1.3 gm.

Potas'sii bicar'bonas. Potassium bicarbonate. By causing potassium carbonate, water, and carbonic acid gas to unite. Antacid. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Potas'sii bichro'mas. Potassium bichromate. Obtained from a native chromate of iron. Alterative. Dose, $\frac{1}{5}$ of a gr., or 0.012 gm.

Potas'sii bitar'tras. Potassium bitartrate. Cream of tartar. A product deposited in wine casks. Refrigerant; laxative. Dose, ʒj to ʒiv, or 4 to 15 gm.

Potas'sii bromi'dum. Potassium bromide. By uniting the element bromine with potassium. Hypnotic. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Potas'sii car'bonas. Potassium carbonate. Washed out from wood ashes. Antacid. Dose, 5 to 10 grs., or 0.325 to 0.65 gm.

Potas′sii chlo′ras. Potassium chlorate. By a process which brings fresh chlorine gas into contact with potassium hydrate. Prophylactic. Mainly as a wash for the throat.

Potas′sii ci′tras. Potassium citrate. Citric acid when mixed with potassium carbonate forms potassium citrate. Diaphoretic. Dose, 5 to 20 grs., or 0.325 to 1.3 gm.

Potas′sii ci′tras efferves′cens. Effervescing potassium citrate. Potassium bicarbonate and citric acid with sugar are mixed in a dry state and, when thrown into water, effervesce, forming a pleasing drink.

Potas′sii cyan′idum. Potassium cyanide. By hydrocyanic upon potassium carbonate, by a roundabout process. Sedative. Dose, $\frac{1}{8}$ of a gr., or 0.008 gm.

Potas′sii et So′dii tar′tras. Rochelle salt. Potassium and sodium tartrate. By mixing cream tartar and sodium carbonate. Laxative. Dose, ʒj to ʒiv, or 4 to 15 gm.

Potas′sii ferrocyan′idum. Potassium ferrocyanide. A compound combining potassium, iron, and hydrocyanic acid. Used chiefly in testing in chemic analysis.

Potas′sii hypophos′phis. Potassium hypophosphite. By mixing potassium carbonate with calcium hypophosphite, potassium hypophosphite is formed. Used in conjunction with other hypophosphites as an alterative in phthisis. Dose, 10 grs., or 0.65 gm.

Potas′sii iod′idum. Potassium iodide. From iodine and potassa. Alterative. Dose, 5 grs. to ʒj, or 0.325 to 30 gm.

Potas′sii ni′tras. Potassium nitrate. Found native in the soil of East India. Diuretic. Dose, 1 to 10 grs., or 0.065 to 0.65 gm.

Potas′sii perman′ganas. Potassium permanganate. Tonic. Dose, 1 or 2 grs., or 0.065 to 0.13 gm.

Potas′sii sul′phas. Potassium sulphate. By sulphuric acid upon potassium carbonate. Used as a diluent for other powders.

Pru′num. Prunes—the fruit. Laxative. One of the ingredients in confection of senna.

Pru'nus virginia'na. Wild cherry—bark. Sedative. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Pulsatil'la. Pulsatilla—the herb. Diaphoretic. Dose, 1 to 3 grs., or 0.065 to 0.195 gm.

Pul'vis antimonia'lis. Antimonial powder. James' powder. A mixture of antimony oxide, and calcium phosphate. Diaphoretic. Dose, 3 to 5 grs., or 0.195 to 0.325 gm.

Pul'vis aromat'icus. Aromatic powder. Cardamom, ginger, cinnamon, and nutmeg. Carminative. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Pul'vis cre'tæ compos'itus. Compound chalk powder. Prepared chalk, sugar, and gum Arabic. Antacid; astringent. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Pul'vis efferves'cens compos'itus. Compound effervescing powder. Seidlitz powders. Rochelle powders. The blue paper contains 35 grs. of tartaric acid. The white paper contains 40 grs. of sodium bicarbonate, and 120 grs. of Rochelle salt. Laxative. Dose, 2 powders in water.

Pul'vis glycyrrhi'zæ compos'itum. Compound licorice powder. German powder. Licorice, senna, sulphur, sugar, oil of fennel. Cathartic. Dose, ʒss to ʒij, or 2 to 8 gm.

Pul'vis ipecacuan'hæ et O'pii. Powder of ipecac and opium. Dover's powder. Anodyne; diaphoretic. Dose, 5 to 10 grs., or 0.325 to 0.65 gm.

Pul'vis jala'pæ compos'itus. Compound powder of jalap. Pulvis purgans. Jalap and cream of tartar. Cathartic. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Pul'vis morphi'næ compos'itus. Compound powder of morphine. Tully's powder. Morphine, camphor, licorice, chalk. Anodyne. Dose, 5 to 10 grs., or 0.325 to 0.65 gm. Each grain equals $\frac{1}{60}$ of a gr. of morphine.

Pul'vis rhe'i compos'itus. Compound powder of rhubarb. Rhubarb, magnesia, and ginger. Cathartic. Dose, 10 grs. to ʒij, or 0.65 to 8 gm.

Pyre'thrum. Pyrethrum—root. Sialagogue. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Pyrogal'lol. Pyrogallic acid. Made by heating gallic acid. Used externally.

Pyroxyli'num. Pyroxylin. Soluble guncotton. By the action of nitric acid upon cotton.

Q.

Quas'sia. Quassia—the wood. Bitter tonic. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Quer'cus al'ba. White oak—bark. Astringent. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Quilla'ja. Quillaia—the bark. Expectorant. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Quinidi'næ sul'phas. Sulphate of quinidine. A cinchona alkaloid. Tonic. Dose, 1 to 10 grs., or 0.065 to 0.65 gm.

Quini'na. Quinine. Alkaloid of Peruvian or cinchona bark. Tonic; antipyretic. Dose, 1 to 15 grs., or 0.065 to 1 gm.

Quini'næ bisul'phas. Quinine bisulphate.

Quini'næ hydrobro'mas. Quinine hydrobromate.

Quini'næ hydrochlo'ras. Quinine hydrochlorate.

Quini'næ sul'phas. Quinine sulphate.

Quini'næ valeria'nas. Quinine valerianate.

These are salts, made by combining the alkaloid quinine with the acids indicated in the titles,—viz., sulphuric, hydrobromic, hydrochloric, and valerianic. All are antipyretic, the last mentioned being also a nerve tonic. The doses are the same as quinine, also, with the exception of the last, which is 1 to 3 grs., or 0.065 to 0.195 gm.

R.

Resi'na. Resin, or rosin. Derived from the resinous exudation of the Southern pine. Used in making cerates and plasters.

Resi'na copai'bæ. Resin of copaiba. A product derived from balsam of copaiba. Urethral stimulant. Dose, 1 to 10 grs., or 0.065 to 0.65 gm.

Resi'na jala'pæ. Resin of jalap. Obtained from jalap root. Cathartic. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Resi'na podophyl'li. Resin of podophyllum. From the root. Cathartic. Dose, ⅛ to 1 gr., or 0.008 to 0.065 gm.

Resi'na scammo'nii. Resin of scammony. From the root. Cathartic. Dose, 1 to 10 grs., or 0.065 to 0.65 gm.

Resorci'num. Resorcin. One of the products from coal-tar. Antiseptic. Dose, 1 to 10 grs., or 0.065 to 0.65 gm.

Rham'nus purshia'na. Cascara—the bark. Cathartic. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Rhe'um. Rhubarb—the root. Cathartic. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Rhus gla'bra. Rhus glabra. Sumac—the fruit. Diuretic. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Rhus toxicoden'dron. Poison ivy—the leaves. Rubefacient. External use.

Ro'sa centifo'lia. Pale rose. Used to flavor confections.

Ro'sa gal'lica. Red rose. Used in confections.

Ru'bus. Blackberry—bark of root. Astringent. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Ru'bus idæ'us. Raspberry fruit. Used in form of syrup as a flavor.

Ru'mex. Yellow dock—root. Alterative. Dose, 5 to 30 grs., or 0.325 to 2 gm.

S.

Sabi'na. Savine—leaves. Stimulant. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Sac'charum. Sugar. The refined product of the sugar-cane.

Sac'charum lac'tis. Sugar of milk. Evaporating whey and allowing it to crystallize. Used as a diluent for other substances.

Salici'num. Salicin. A glucoside obtained from the willow. Tonic. Dose, 1 to 10 grs., or 0.065 to 0.65 gm.

Sa'lol. Salol. One of the coal-tar products. Antiseptic. Dose, 1 to 10 grs., or 0.065 to 0.65 gm.

Sal'via. Sage—leaves. Astringent. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Sambu'cus. Elder—the flowers. Diaphoretic. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Sanguina'ria. Bloodroot. Emetic; expectorant. Dose, 5 grs. to ʒss, or 0.325 to 2 gm.

San'talum ru'brum. Red saunders—the wood. Used as a color.

Santon'ica. Levant wormseed. Anthelmintic. Dose, 5 grs. to ʒss, or 0.325 to 2 gm.

Santoni'num. Santonin. An active principle from wormseed. Anthelmintic. Dose, 1 to 3 grs., or 0.065 to 0.195 gm.

Sa'po. Soap—white Castile. A compound made from olive oil and soda. Used as a detergent.

Sa'po mol'lis. Soft soap. Green soap. Made from various oils and potassa. Detergent.

Sarsaparil'la. Sarsaparilla—root. Alterative. Dose, 5 grs. to ʒss, or 0.325 to 2 gm.

Sas'safras. Sassafras—bark of root. Stimulant. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Sas'safras medul'la. Sassafras-pith. Emollient. Used in eye-washes.

Scammo'nium. Scammony, a resin. Cathartic. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Scil'la. Squill—the bulb. Expectorant. Dose, 1 to 3 grs., or 0.065 to 0.195 gm.

Scopa'rius. Broom-tops. Diuretic. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Scutella'ria. Scullcap—the herb. Antispasmodic. Dose, 5 grs. to ʒss, or 0.325 to 2 gm.

Sen'ega. Senega—root. Expectorant. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Sen'na. Senna—leaves. Cathartic. Dose, 5 grs. to ʒss, or 0.325 to 2 gm.

Serpenta'ria. Virginia snakeroot. Tonic. Dose, 5 grs. to ℈iss, or 0.325 to 2 gm.

Se'vum. Suet from the sheep. Used in ointments.

Sina'pis al'ba. White mustard-seed.

Sina'pis ni'gra. Black mustard-seed. Emetic in form of powder mixed with water to form a cream, and given until vomiting occurs. Externally in the form of plaster or poultice as an irritant or vesicant.

So'da. Soda; caustic soda. Used as a caustic.

So'dii ac'etas. Sodium acetate. Formed when sodium carbonate and acetic acid are brought together. Diuretic. Dose, 5 to 30 grs., or 0.325 to 2 gm.

So'dii ar'senas. Sodium arsenate. By bringing together sodium bicarbonate and white arsenic. Alterative. Dose, $\frac{1}{20}$ to $\frac{1}{8}$ of a gr., or 0.003 to 0.008 gm.

So'dii ben'zoas. Sodium benzoate. Action of benzoic acid upon sodium carbonate. Alterative; diuretic. Dose, 5 to 30 grs., or 0.325 to 2 gm.

So'dii bicar'bonas. Sodium bicarbonate. By injecting carbonic acid gas into a solution of sodium carbonate. Antacid. Dose, 5 grs. to ʒj, or 0.325 to 4 gm.

So'dii bisul'phis. Sodium bisulphite. Sulphurous acid forms it when brought into contact with sodium bicarbonate. Antiseptic; prophylactic. Dose, 5 grs. to ʒss, or 0.325 to 2 gm.

So'dii bo'ras. Sodium borate. Borax. Found native in California and Southern Europe. Antacid; diuretic. Dose, 5 to 30 grs., or 0.325 to 2 gm.

So'dii bromi'dum. Sodium bromide. By acting upon hydrobromic acid with sodium carbonate. Hypnotic. Dose, 5 to 30 grs., or 0.325 to 2 gm.

So'dii car'bonas. Sodium carbonate. From common salt by a complicated process involving the use of sulphuric acid and coal. Antacid. Dose, 5 grs. to ʒss, or 0.325 to 2 gm.

So'dii car'bonas exsicca'tus. Dried sodium carbonate.

So'dii chlo'ras. Sodium chlorate. From sodium tartrate and potassium chlorate. Prophylactic. Dose, 1 to 10 grs., or 0.065 to 0.65 gm.

So'dii chlori'dum. Sodium chloride. From sea-water.

So'dii hypophos'phis. Sodium hypophosphite. Tonic in lung troubles. Dose, 5 to 15 grs., or 0.325 to 1 gm.

So'dii hyposul'phis. Sodium hyposulphite. Alterative; antiseptic. Dose, 5 to 15 grs., or 0.325 to 1 gm.*

So'dii iod'idum. Sodium iodide. By acting upon soda with iodine. Alterative. Dose, 5 to 30 grs., or 0.325 to 2 gm.

So'dii ni'tras. Sodium nitrate. Found native in South America. Alterative. Dose, 5 to 30 grs., or 0.325 to 2 gm.

So'dii ni'tris. Sodium nitrite. Used in preparing spirit of niter.

So'dii phos'phas. Sodium phosphate. From bone-ash and sodium carbonate. Cathartic. Dose, ʒj or more, or 4 gm. or more.

So'dii pyrophos'phas. Sodium pyrophosphate. Used for chemic purposes.

So'dii salicyl'as. Sodium salicylate. By acting upon sodium carbonate with salicylic acid. Alterative in rheumatism. Dose, 5 to 30 grs., or 0.325 to 2 gm.

So'dii sul'phas. Sodium sulphate. Glauber's salt. It is a by-product in the making of hydrochloric acid. Cathartic. Dose, ʒj to ℥j, or 4 to 30 gm.

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* Whenever, as in these two cases, the statement as to the origin is omitted, it is on account of the complication of the process.

So'dii sul'phis. Sodium sulphite. By the action of sodium carbonate and sulphurous acid. Prophylactic. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Spartei'næ sul'phas. Sparteine sulphate. An alkaloid from the broom. Diuretic. Dose, ⅛ to 1 gr., or 0.008 to 0.065 gm.

Spige'lia. Pinkroot—root. Vermifuge. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Spir'itus æthe'ris. Spirit of ether. A mixture of ether and alcohol. Stimulant. Dose, 10 to 20 ♏, or 0.65 to 1.3 c.c.

Spir'itus æthe'ris compos'itus. Hoffman's anodyne, or compound spirit of ether. Anodyne. Dose, 10 to 60 ♏, or 0.65 to 4 c.c.

Spir'itus æthe'ris nitro'si. Sweet spirit of niter, or spirit of nitrous ether. Diuretic; diaphoretic. Dose, 15 ♏ to ʒij, or 1 to 8 c.c.

Spir'itus ammo'niæ. Spirit of ammonia. A 10 per cent. alcoholic solution of ammonia gas. Stimulant. Dose, 10 to 30 ♏, or 0.65 to 2 c.c.

Spir'itus ammo'niæ aromat'icus. Aromatic spirit of ammonia. Flavored with oil of lemon, lavender, and nutmeg. Stimulant. Dose, ½ to ʒij, or 2 to 8 c.c.

Spir'itus amyg'dalæ ama'ræ. Spirit of bitter almond. Used as a flavor.

Spir'itus ani'si. Spirit of anise. Carminative. Dose, 10 ♏ to fʒj, or 0.65 to 4 c.c.

Spir'itus auran'tii. Spirit of orange. Used as a flavor.

Spir'itus auran'tii compos'itus. Compound spirit of orange Oil of orange, lemon, anise, and coriander with alcohol. Used as a flavor.

Spir'itus cam'phoræ. Spirit of camphor. Stimulant. Dose, 5 to 30 ♏, or 0.325 to 2 c.c.

Spir'itus chlorofor'mi. Spirit of chloroform. Stimulant. Dose, 5 to 60 ♏, or 0.325 to 4 c.c.

Spir'itus cinnamo'mi. Spirit of cinnamon. Carminative. Dose, 15 ♏ to fʒij, or 1 to 8 c.c.

Spir'itus frumen'ti. Whisky. Stimulant. Dose, fʒj to fℨij, or 4 to 60 c.c.

Spir'itus gaulthe'riæ. Spirit of wintergreen. Carminative; antiseptic. Dose, f℥ss to f℥ij, or 2 to 8 c.c.

Spir'itus glonoi'ni. Spirit of glonoin. Spirit of nitroglycerin (1 per cent.). Stimulant. Dose, 1 ♏, or 0.065 c.c.

Spir'itus junip'eri. Spirit of juniper. Diuretic. Dose, 15 to 60 ♏, or 1 to 4 c.c.

Spir'itus junip'eri compos'itus. Compound spirit of juniper. Oil juniper, oil caraway, oil fennel seed. Diuretic. Dose, 15 to 60 ♏, or 1 to 4 c.c.

Spir'itus lavan'dulæ. Spirit of lavender. Stimulant. Externally as lotion.

Spir'itus limon'is. Spirit of lemon. Used as a flavor.

Spir'itus men'thæ piper'itæ. Spirit of peppermint. Carminative. Dose, ℥ss to ℥j, or 2 to 4 c.c.

Spir'itus men'thæ vir'idis. Spirit of spearmint. Carminative. Dose, ℥ss to f℥j, or 2 to 4 c.c.

Spir'itus myr'ciæ. Bay rum. External stimulant.

Spir'itus myris'ticæ. Spirit of nutmeg. Used as a flavor.

Spir'itus phos'phori. Spirit of phosphorus. For making the elixir.

Spir'itus vi'ni gal'lici. Spirit of French wine or brandy. Stimulant.

Staphisa'gria. Stavesacre; larkspur seed. Used externally to destroy lice, etc.

Stillin'gia. Queensroot. Alterative. Dose, 5 grs. to ℥ss, or 0.325 to 2 gm.

Stramo'nii fo'lia. Stramonium leaves. Narcotic. Dose, 1 to 3 grs., or 0.065 to 0.195 gm.

Stramo'nii se'men. Stramonium seed. Narcotic. Dose, 1 to 3 grs., or 0.065 to 0.195 gm.

Stron'tii bromi'dum. Strontium bromid. The salt formed by the action when hydrobromic acid and strontium carbonate are brought together. Sedative. Dose, 5 to 10 grs., or 0.325 to 0.65 gm.

Stron'tii iod'idum. Strontium iodid. The strontium carbonate with hydriodic acid gives the iodid. Alterative. Dose, 5 to 10 grs., or 0.325 to 0.650 gm.

Stron'tii lac'tas. Strontium lactate. Lactic acid with strontium carbonate yields the lactate. Alterative. Dose, 5 to 10 grs., or 0.325 to 0.65 gm.

Strophan'thus. Strophanthus seed. Heart stimulant. Dose, 1 to 3 grs., or 0.065 to 0.195 gm.

Strychni'na. Strychnine. Insoluble, and therefore little used. The alkaloid from nux vomica seeds.

Strychni'næ sul'phas. Strychnine sulphate. Sulphuric acid and strychnine unite and yield strychnine sulphate. Tonic. Dose, $\frac{1}{60}$ to $\frac{1}{20}$ of a gr., or 0.001 to 0.003 gm.*

Sty'rax. Storax. A resinous substance from a tropical tree. Stimulant. Used in the form of tincture.

Sulphu'ris iod'idum. Sulphur iodid. By melting together sulphur and iodin. Alterative. Dose, 1 to 5 grs., or 0.065 to 0.325 gm.

Sul'phur lo'tum. Washed sulphur.

Sul'phur præcipita'tum. Precipitated sulphur.

Sul'phur sublima'tum. Sublimed sulphur. These three are different forms of the same thing. Alterative. Dose, ʒss to ʒiv, or 2 to 15 gm.

Sum'bul. Sumbul or musk-root. Stimulant. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Supposito'ria. Suppositories. Any substance mixed with melted cocoa butter, run into suitably-shaped molds and cooled. They are formed for insertion into the rectum and the male and female urethra.

Supposito'ria glyceri'ni. Glycerin suppositories.

Syru'pus. Syrup. Sugar dissolved in water.

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* In stating the doses of poisons it is customary to give the largest safe dose. When the case can be watched by the physician, much *larger* doses may be and *are* given. But in *stating* a dose, caution must be observed.

Syru′pus aca′ciæ. Syrup of gum arabic. By mixing mucilage and syrup together. Demulcent. Used as a vehicle.

Syru′pus ac′idi ci′trici. Syrup of citric acid. A mixture of citric acid, essence of lemon, and syrup, designed to take the place of syrup of lemon as a flavor.

Syru′pus ac′idi hydriod′ici. Syrup of hydriodic acid.* Alterative. Dose, 30 to 60 ♏, or 2 to 4 c.c.

Syru′pus al′lii. Syrup of garlic. Expectorant. Dose, f℥ ss to f℥ ij, or 2 to 4 c.c.

Syru′pus al′theæ. Syrup of marshmallow. Sugar is dissolved in an infusion of the root. Used as a vehicle for other things.

Syru′pus amyg′dalæ. Syrup of almond. A mixture of bruised almonds, water, and sugar. Used as a vehicle.

Syru′pus auran′tii. Syrup of orange. A mixture of the tincture of orange peel and syrup. Used as a vehicle.

Syru′pus auran′tii flo′rum. Syrup of orange flower. Distilled orange-flower water and sugar.

Syru′pus cal′cii lactophospha′tis. Syrup of lactophosphate of lime. Tonic. Dose, f℥ ss to f℥ ij, or 2 to 4 c.c.

Syru′pus cal′cis. Syrup of lime. Antacid. Dose, f℥ ss to f℥ j, or 2 to 4 c.c.

Syru′pus fer′ri iod′idi. Syrup of ferrous iodid. Tonic; alterative. Dose, 10 ♏ to ℥ j, or 0.650 to 4 c.c.

Syru′pus fer′ri quini′næ et strychni′næ phospha′tum. Syrup of phosphate of iron, quinine, and strychnine. Tonic. Dose, f℥ ss to f℥ j, or 2 to 4 c.c. f℥ j = *about* $\frac{1}{80}$ of a gr. of strychnia.

Syru′pus hypophosphi′tum. Syrup of hypophosphites. Tonic. Dose, f℥ ss to f℥ ij, or 2 to 8 c.c.

Syru′pus ipecacuan′hæ. Syrup of ipecac. Expectorant. Dose, 5 to 30 ♏, or 0.325 to 2 c.c.

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* When the ingredients are not further indicated, the title itself serves that purpose. As here, a mixture of the substance named, with syrup.

Syru'pus krame'riæ. Syrup of rhatany. The tincture is added to syrup. Astringent. Dose, f℥ss to f℥ij, or 2 to 4 c.c.

Syru'pus lactuca'rii. Syrup of lactucarium. From the tincture with syrup. Sedative. Dose, f℥ss to f℥ij, or 2 to 4 c.c.

Syru'pus pi'cis liq'uidæ. Syrup of tar. Stimulant. Dose, f℥ss to f℥ij, or 2 to 4 c.c.

Syru'pus pru'ni virginia'næ. Syrup of wild cherry bark. Made by adding the infusion to syrup and glycerin. Sedative. Dose, ℥ss to ℥ij, or 2 to 8 c.c.

Syru'pus rhe'i. Syrup of rhubarb. The fluid extract is added to simple syrup. Cathartic. Dose, ℥j to ℥iv, or 4 to 15 c.c.

Syru'pus rhe'i aromat'icus. Aromatic syrup of rhubarb. The tincture is added to simple syrup. Cathartic. Dose, ℥ss to ℥iv, or 2 to 15 c.c.

Syru'pus ro'sæ. Syrup of rose. Flavor.

Syru'pus ru'bi. Syrup of blackberry. The fluid extract added to syrup. Astringent. Dose, ℥j to ℥iv, or 4 to 15 c.c.

Syru'pus ru'bi i'dæi. Syrup of raspberry. Used as a flavor.

Syru'pus sarsaparil'læ compos'itus. Compound syrup of sarsaparilla. Fluid extract is added to syrup. Alterative. Dose, ℥j to ℥iv, or 4 to 15 c.c.

Syru'pus scil'læ. Syrup of squill. The vinegar of squill with sugar. Expectorant. Dose, ℥ss to ℥j, or 2 to 4 c.c.

Syru'pus scil'læ compos'itus. Compound syrup of squill. Fluid extract of squill, senega, and tartar emetic with syrup. Expectorant. Dose, ℥ss to ℥j, or 2 to 4 c.c. One f℥ = 1 gr. of tartar emetic.

Syru'pus sen'egæ. Syrup of senega. The fluid extract is added to syrup. Expectorant. Dose, ℥ss to ℥j, or 2 to 4 c.c.

Syru'pus sen'næ. Syrup of senna. The infusion with sugar and aromatics. Cathartic. Dose, ℥j to ℥iv, or 2 to 15 c.c.

Syru'pus toluta'nus. Syrup of tolu. The tincture with sugar and water. Vehicle for other things.

Syru'pus zingib'eris. Syrup of ginger. The tincture with sugar and water. Carminative.

T.

Tab'acum. Tobacco leaves. Used chiefly as a poultice.

Tamarin'dus. Tamarind—the pulp. Laxative. Dose, ʒj to ʒiv, or 4 to 15 gm.

Tanace'tum. Tansy—the leaves. Stimulant. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Tarax'acum. Dandelion—the root. Laxative. Dose, 5 to 30 grs., or 0.325 to 2 gm.

Terebe'num. Terebene. A fluid made from turpentine. Expectorant. Dose, 1 to 10 ♏, or 0.065 to 0.65 c.c.

Terebin'thina. Turpentine. An exudation from the pine tree. Used for the preparation of spirit of turpentine.

Terebin'thina canaden'sis. Canada turpentine. Balsam of fir. A natural exudation from a species of fir tree.

Ter'pini hy'dras. Terpene hydrate. A crystalline substance made from turpentine. Expectorant. Dose, 1 to 10 grs., or 0.065 to 0.65 gm.

Thy'mol. Thymol. Obtained from the herb, thyme. Used in antiseptic washes.

Tinctu'ra aconi'ti. Tincture of aconite. Sedative. Dose, 1 to 5 ♏, or 0.65 to 0.325 c.c.

Tinctu'ra al'oes. Tincture of aloes. Cathartic. Dose, ʒj to ʒiv, or 2 to 15 c.c.

Tinctu'ra al'oes et myrrh'æ. Tincture of aloes and myrrh. Stimulant; cathartic. Dose, ʒss to ʒij, or 2 to 8 c.c.

Tinctu'ra ar'nicæ flo'rum. Tincture of arnica flowers. Used externally for bruises, etc.

Tinctu'ra ar'nicæ ra'dicis. Tincture of arnica root. Stimulant. Dose, 10 to 30 ♏, or 0.65 to 2 c.c.

Tinctu'ra asafœ'tidæ. Tincture of asafœtida. Nervine. Dose, fʒj to fʒij, or 4 to 8 c.c.

Tinctu'ra auran'tii arma'ri. Tincture of bitter orange. Used as a flavor.

Tinctu'ra auran'tii dul'cis. Tincture of sweet orange-peel. Used for flavoring purposes.

Tinctu'ra belladon'næ folio'rum. Tincture of belladonna leaves. Narcotic; antispasmodic. Dose, 5 to 30 ♏, or 0.325 to 1 c.c.

Tinctu'ra benzoin'i. Tincture of benzoin. Stimulant. Dose, 10 to 30 ♏, or 0.65 to 2 c.c.

Tinctu'ra benzoin'i compos'ita. Compound tincture of benzoin. Stimulant. Dose, 15 to 60 ♏, or 2 to 4 c.c.

Tinctu'ra bryo'niæ. Tincture of bryony. Cathartic. Dose, ʒj to ʒij, or 4 to 8 c.c.

Tinctu'ra calen'dulæ. Tincture of calendula. Stimulant. Dose, 5 to 30 ♏, or 0.325 to 2 c.c.

Tinctu'ra calum'bæ. Tincture of columbo. Tonic. Dose, 10 ♏ to ʒj, or 0.65 to 4 c.c.

Tinctu'ra can'nabis in'dicæ. Tincture of cannabis. Narcotic. Dose, 5 to 20 ♏, or 0.325 to 2 c.c.

Tinctu'ra canthar'idis. Tincture of cantharides. Vesicant. Used externally. Uterine stimulant. Dose, 1 to 10 ♏, or 0.065 to 0.65 c.c.

Tinctu'ra cap'sici. Tincture of capsicum. Stimulant. Dose, 10 to 60 ♏, or 0.65 to 4 c.c.

Tinctu'ra cardamo'mi. Tincture of cardamom. Carminative. Dose, ʒss to ʒj, or 2 to 4 c.c.

Tinctu'ra cardamo'mi compos'ita. Compound tincture of cardamom. Carminative. Dose, fʒj to fʒij, or 4 to 8 c.c.

Tinctu'ra cat'echu compos'ita. Compound tincture of catechu. Astringent. Dose, ʒss to ʒij, or 2 to 8 c.c.

Tinctu'ra chira'tæ. Tincture of chiretta. Tonic. Dose, 30 ♏ to ʒij, or 2 to 8 c.c.

Tinctu'ra cimicif'ugæ. Tincture of cimicifuga. Alterative. Dose, 60 ♏ to fʒij, or 4 to 8 c.c.

Tinctu'ra cincho'næ. Tincture of cinchona. Tonic. Dose, ʒss to ʒij, or 2 to 8 c.c.

Tinctu'ra cincho'næ compos'itæ. Compound tincture of cinchona. Bitter tonic. Dose, ʒj to ʒij, or 4 to 8 c.c.

Tinctu'ra cinnamo'mi. Tincture of cinnamon. Stimulant. Dose, ʒss to ʒj, or 2 to 4 c.c.

Tinctu'ra col'chici sem'inis. Tincture of colchicum seed. Alterative. Dose, 10 to 60 ♏, or 0.65 to 4 c.c.

Tinctu'ra cro'ci. Tincture of saffron. Emmenagogue. Dose, ʒss to ʒij, or 2 to 8 c.c.

Tinctu'ra cube'bæ. Tincture of cubeb. Stimulant; expectorant. Dose, ʒss to ʒij, or 2 to 8 c.c.

Tinctu'ra digita'lis. Tincture of digitalis. Heart stimulant. Dose, 5 to 15 ♏, or 0.325 to 1 c.c.

Tinctu'ra herba'rum recen'tium. Tincture of fresh herbs. There are none official. The typical formula is ten parts of drug to 100 parts of strong alcohol. They are used to supersede the homeopathic mother tinctures.

Tinctu'ra fer'ri chlo'ridi. Tincture of chlorid of iron. Tincture of sesqui-chlorid of iron. Tonic. Dose, 5 to 30 ♏, or 0.325 to 2 c.c.

Tinctu'ra gal'læ. Tincture of nutgall. Astringent. Dose, ʒss to ʒj, or 2 to 4 c.c.

Tinctu'ra gelsem'ii. Tincture of gelsemium. Antispasmodic. Dose, 5 to 15 ♏, or 0.325 to 1 c.c.

Tinctu'ra gentia'næ compos'ita. Compound tincture of gentian. Tonic. Dose, ʒss to ʒij, or 2 to 8 c.c.

Tinctu'ra guaia'ci. Tincture of guaiac. Stimulant. Dose, ʒss to ʒj, or 2 to 4 c.c.

Tinctu'ra guaia'ci ammonia'ta. Ammoniated tincture of guaiacum. Stimulant. Dose, ʒss to ʒj, or 2 to 4 c.c.

Tinctu'ra hu'muli. Tincture of hops. Sedative. Dose, ʒj to ʒiv, or 4 to 15 c.c.

Tinctu'ra hydras'tis. Tincture of golden seal. Tonic; cathartic. Dose 30 ♏ to ʒj, or 2 to 4 c.c.

Tinctu'ra hyoscy'ami. Tincture of hyoscyamus. Tincture of henbane. Hypnotic. Dose, 5 to 15 ♏, or 0.325 to 1 c.c.

Tinctu'ra io'di. Tincture of iodin. Used externally.

Tinctu'ra ipecacuan'hæ et o'pii. Tincture of ipecac and opium. Anodyne; diaphoretic. Dose, 1 to 10 ♏, or 0.065 to 0.65 c.c.

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U.

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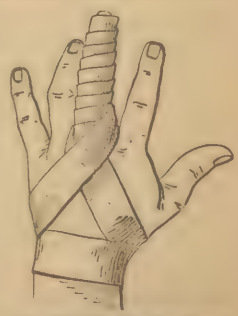

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